

INDEX OF SUBJECTS

ABSTRACTS A and B, 1935.

An asterisk denotes a previous abstract. Patents are marked (P.).

- Abhra blasma*, B., 828.
- Abietic acid**, viscosity of, B., 510.
action of heat on, and its hydrogenation, A., 218.
water-insoluble salts, production of solutions of, (P.), B., 511.
esters, production of, (P.), B., 961.
detection of, biologically, A., 394.
- Abortion**, relation of oestrin to, A., 1425.
- Abrasives**, (P.), B., 407.
manufacture of, (P.), B., 1095.
influence of particle size, shape, aggregation, and hardness on abrasiveness of, B., 901.
boron carbide as, B., 804.
moulded boron carbide and cemented tantalum and tungsten carbides as, B., 1094.
application of, to adhesive bands, (P.), B., 1121.
for hard alloys, etc., (P.), B., 188.
flexible waterproof, adhesive for, (P.), B., 242.
natural and electric-furnace, hardness of, B., 1094.
- Abrasive articles**, (P.), B., 805.
manufacture of, (P.), B., 101.
bonded, manufacture of, (P.), B., 228, 805.
ceramic-bonded, (P.), B., 1095.
manufacture of, (P.), B., 455.
composite, (P.), B., 23.
flexible, manufacture of, (P.), B., 993.
rubber-bonded, (P.), B., 902.
manufacture of, (P.), B., 101, 631, 674, 950.
- Abrasive bodies**, manufacture of, (P.), B., 1044.
- Abrasive cloths**, for polishing, etc., (P.), B., 150.
- Abrasive materials**, use of boron carbide as, B., 227.
granular, (P.), B., 851.
sheet, waterproof, manufacture of, (P.), B., 631.
shellac-bonded, manufacture of, (P.), B., 407.
- Abrasive products**, use of, in building industry, B., 1094.
- Abrasive wheels**, for polishing, (P.), B., 993.
resin-bonded, (P.), B., 195.
- Abrin**, constitution of, A., 1131, 1375.
determination of, by flocculation, A., 1263.
- Abrus precatorius*, amino-acid from seeds of, A., 1131.
- Absorption spectra**. See under Spectra.
- Aburagarei oil**, unsaponifiable matter of, B., 912.
- Aburazamé oil**, A., 882.
- Acacia**, deposition and excretion of, A., 246.
- Accumulators, electric**, (P.), B., 237, 858, 958, 1100, 1101.
containers for, (P.), B., 683.
plates for, (P.), B., 415.
ribbed plates for, (P.), B., 508.
rubber-covered plates for, (P.), B., 68.
working-up of sludge from, B., 681.
storage of energy in, (P.), B., 786.
alkaline, active material for, (P.), B., 682.
electrodes for, (P.), B., 67.
behaviour of, at low temperatures, B., 638.
- Foré type**, corrosion of positive grids of, B., 811.
- lead**, (P.), B., 812.
calculation of capacity of, B., 315.
molal electrode potentials and reversible potentials of, A., 305.
- Acenaphthene**, oxidation of, and isolation of its quinone, A., 347.
derivatives, manufacture of, (P.), B., 940.
- Acenaphthene-5-carboxylic acid**, and the ethylanilide and ethyl-*o*-toluidide therefrom, production of, (P.), B., 940.
- Acenaphthene-5:6-dicarboxylic acid** and diethylanilide therefrom, production of, (P.), B., 940.
- Acenaphthenequinone**, condensation of, with cresols and naphthols, A., 86.
- Acenaphthylene**, manufacture of, (P.), B., 348.
- β -1-Acenaphthylethyl alcohol**, and its derivatives, A., 968.
- 2-(β -1-Acenaphthylethyl)cyclohexanone-2-carboxylic acid**, ethyl ester, A., 968.
- α -(β '-1-Acenaphthylethyl)picmelic acid**, A., 968.
- Acer saccharum*, enzyme from, A., 658.
- Acetal**, fluoro-, A., 733.
- Acetals**, manufacture of, (P.), B., 749.
cyclic, velocity of hydrolysis of, A., 1465.
narcotic action of, A., 779.
higher, manufacture of, (P.), B., 442.
- Acetaldehyde**, formation of, from lactic acid, A., 1531.
manufacture of, (P.), B., 443.
from acetylene, (P.), B., 620.
catalytically, (P.), B., 894.
vapour pressures of mixtures of, with acetic acid and with water, A., 695.
- Acetaldehyde**, acetolic condensations of, with ethyl acetoacetate, A., 65.
aldol condensation of, A., 962.
conversion of, into acetic acid, B., 261.
catalytic decomposition of, A., 711.
by nitrogen monoxide and dioxide, A., 1466.
thermal decomposition of, A., 172, 307, 708, 827.
effect of oxygen on, A., 307.
slow oxidation of, A., 172.
catalytic oxidation of, in presence of iron pyrophosphates, A., 309.
formation of acetone from water and, A., 963.
p-nitrobenzoylhydrazone, A., 1259.
2:4-dinitrophenylhydrazone, A., 743.
oxalurhydrazone, A., 869.
o-tolylsemicarbazone, A., 1259.
occurrence of, in tropical fruits, B., 875.
in plant and animal tissues, A., 653.
in human expired air, A., 112.
determination of, A., 102.
in spirits and wines, B., 920.
- Acetamide**, and its halogeno-derivatives, taste of, A., 730.
equilibria of, with metallic nitrates, A., 582.
- Acetanilide**, equilibrium of, with phenacetin and sulphonal, A., 970.
poisoning by. See under Poisoning.
- Acetanilide**, *p*-amino-, and its *d*-camphor-10-sulphonate, A., 1118.
- N*-bromo-**, rearrangement of, in chlorobenzene catalysed by trichloroacetic acid, A., 1209.
nitroso-, reactions of, A., 78.
- Acetanilides**, *N*-methylation of, A., 854.
- Acetanilides**, nitroso-, *p*-substituted, decomposition of, in benzene, A., 828.
- 2-Acetanilidomethenyl-1:3-diketohydrindene**, production of, (P.), B., 894.
- Acetic acid**, production of, (P.), B., 139, 442, 840.
and its derivatives, (P.), B., 92.
wood for plant for, B., 806.
from acetaldehyde, B., 261, 539.
catalytically, (P.), B., 665.
from methyl alcohol, B., 893.
from methyl alcohol and carbon monoxide, (P.), B., 347.
in distillation of peat, B., 6.
use of Nasakin solvent instead of ether for extraction of, B., 1036.
purification of, in the Asha plant, B., 1036.

Acetic acid, concentration of, (P.), B., 262.
 Raman spectra, m.p. and viscosities of mixtures of nitric acid and, A., 564.
 scattering of light by, A., 146.
 conductivity of, under high potentials, A., 825.
 electrolysis of, A., 45.
 ionisation constant of, in methyl alcohol-water mixtures, A., 1321.
 vapour pressures of mixtures of, with acetaldehyde and with water, A., 695.
 rapid evaporation of mixtures of, with benzoic acid, A., 290.
 b.p. of mixtures of, with pyridine, A., 1067.
 physical properties of mixtures of, with sulphuric acid, A., 710.
 association of, in aqueous solution, A., 166.
 dissociation constant of, in salt solutions, A., 166.
 in sodium chloride solutions, A., 166.
 distillation and rectification of dilute solutions of, B., 839.
 and its sodium salt, electrolysis of solutions containing sodium nitrate and, A., 1105.
 constitution of water in solutions of, A., 1058.
 partition coefficients of, for the systems castor oil-water and triricinolein-water, A., 696.
 surface tension of salt solutions containing, A., 1317.
 and its cadmium salt, equilibrium of, with water, A., 583.
 equilibrium of, with cadmium sulphate and water, A., 36.
 with pyridine, A., 167, 291.
 catalytic chlorination of, A., 1350.
 dehydration of, by azeotropic distillation, B., 539.
 equilibrium constant for esterification of, in gaseous phase, A., 301.
 slow oxidation of, A., 172.
 oxidation of, by hydrogen peroxide, A., 472.
 reaction of, with methyl alcohol, A., 43.
 compounds of, with magnesium chloride, A., 179.
 molecular compounds of, with its salts, A., 1323.
 double compound of stannic chloride and, A., 1333.
 manufacture of, by-products from, B., 1036.
 as product of assimilation, A., 1289.
 anhydrous, transfer of ions in solutions of, A., 825.
 complex, isomeric forms of, A., 618.
 glacial, manufacture of, B., 745.
 detection of, A., 877.
 determination of, A., 876.
 determination in, of propionic and butyric acids, B., 839.
Acetic acid, salts, anodic oxidation of, A., 176.
 products of electrolysis of, A., 45.
 metallic salts, amphoteric, in acetic acid solution, A., 583.
 alkali salts, manufacture of, (P.), B., 899.
 activity coefficients of, in aqueous solutions, A., 1077.
 aluminium subsalt, solutions of, A., 313.
 basic aluminium salt, solubility of, A., 695.
 ammonium salt, use of alcoholic solutions of, in electro-analysis, A., 1210.
 ammonium uranyl salt, crystal structure of, A., 1450.

Acetic acid, calcium salt, reaction between soda and, B., 99.
 lead salt, oxidation of polyhydroxy-compounds by, A., 454.
 assay of solutions of, B., 205.
 basic, analysis and properties of, B., 354.
 potassium salt, density of aqueous solutions of, A., 817.
 potassium uranyl salt, crystal structure of, A., 152.
 rare-earth salts, A., 606.
 sodium salt, production of kraft pulp and, from waste wood, B., 221.
 sodium uranyl salt, crystal structure of, A., 17.
 thallium salt, poisoning by. See under Poisoning.
Acetic acid, alkyl esters, diamagnetism of, A., 1453.
 β -benzoyl ethyl ester, A., 355.
 γ -bromoheptyl and γ -bromononyl esters, A., 990.
 β -butadienyl ester, manufacture of, (P.), B., 347.
 butyl ester, catalytic production of, B., 395.
 vapour-liquid equilibrium in systems of, with *n*-butyl alcohol, B., 584.
 β -dichloropropyl ester, A., 1222.
 1-cyanocyclohexyl ester, A., 607.
 dimethylaminoethyl ester, and its methiodide, (P.), B., 287.
 ethyl ester, manufacture of, from ethyl alcohol, (P.), B., 442.
 esterification constant of, A., 33.
 influence of temperature on hydrolysis of, A., 309.
 effect of neutral salts on hydrolysis of, A., 1328.
 reaction of, with magnesium isopropyl chloride, A., 845.
 β -ethyl-*n*-butyl ester, (P.), B., 715.
 ethylidene and vinyl esters, manufacture of, from acetylene, (P.), B., 619.
 methyl ester, change in surface tension of solutions of, due to hydrolysis, A., 1070.
 action of, on methyl chlorosulphonate, A., 733.
 Δ^1 -cyclopentenylmethyl ester, Raman spectrum of, A., 146.
 $\alpha\alpha\beta$ -triphenylethyl ester, A., 338.
Acetic acid, bromo-, bromide liberated by interaction of ions and molecules in, A., 452.
 complexes of, with organic bases and toxins, A., 780.
 action of, on sexual functions of rats, A., 656.
 chloro-derivatives, distribution of, between water and alkyl halides, A., 929.
 reaction of, with piperazine and its derivatives, A., 1133.
 with *N*-phenylpiperazine, A., 1253.
 chloro-, use of hydrolysis of, in actinometry, A., 1211.
 condensation of, with thiocarbamides, A., 364.
 salts, action of ions on velocity of reaction of, with thiosulphates, A., 309.
 β -butadienyl ester, manufacture of, (P.), B., 347.
 n -hexyl ester, A., 1133.
mono- and *di*-chloro-, distribution of, between two contiguous liquid phases, A., 441.
mono- and *tri*-chloro-, dissociation constants of, in ethyl alcohol, A., 302.

Acetic acid, dichloro-, production of, (P.), B., 396.
 trichloro-, and its hydrate, cryoscopy of, in benzene and in dioxan solution, A., 1458.
 partition coefficient of, A., 159.
 molecular compounds of, with alcohols, phenols, and ethers, A., 606.
 halogeno-, reactions of, with cysteine and thioglycolic acid, A., 453.
 iodo-, biological action of, A., 658.
 poisoning by. See under Poisoning.
 effect of insulin on hyperglycemia from, A., 119.
 inactivation of proteinases by, A., 1279.
 effect of, on carbohydrate metabolism, A., 1020.
 on mammalian heart, A., 530.
 on muscle, A., 239, 1263, 1276.
 on rabbit muscle, A., 1158.
 on sugar in urine, A., 1158.
 nitro-, ethyl ester, nitronic methyl ester of, A., 334.
 substituted derivatives, nickel salts, additive compounds of, with benzyl-amino and phenylhydrazine, A., 182.
 disubstituted derivatives, and their nitrophenyl esters, optical rotation of, A., 14.
 thio-. See Thioacetic acid.
 thiol-, and its derivatives, complex metallic salts of, A., 591.
Acetic anhydride, reaction of, with β -naphthamidrazone, A., 81.
Acetic 3:5-dinitrophenylcarbamic anhydride, A., 336.
Acetoacetanilide, production of, (P.), B., 761.
Acetoacetic acid, dissociation constant of, in sodium chloride solutions, A., 166.
 velocity of bromination of, A., 174.
 oxidation of, A., 1106.
 produced by *Bacillus coli*, A., 663.
 action of methylglyoxal on, A., 1412.
 ethyl ester, condensations with, A., 83, 1224.
 acetolic condensations of, with acetaldehyde, A., 65.
 alkylation of, by toluenesulphonic esters, A., 1242.
 migration of allyl groups in homologues of, A., 1482.
 reactions of, A., 474.
 p -nitrobenzoylhydrazone, A., 1259.
 N -nitroguanylimino of, A., 769.
 $2:4$ -dinitrophenylhydrazone, A., 743.
 o -tolylsemicarbazone, A., 1259.
 formation and breakdown of, in animal tissues, A., 1408.
 production of, in fasting and diabetes, A., 382.
Acetoacetic acids, esters, alkylation of, A., 64.
Acetoaceto-*p*-phenetide, A., 336.
Acetoaceto-*p*-xylylide, A., 336.
Acetobacter chroococcum, lethal action of ultra-violet light on, A., 537.
 β -**Acetobromoarabinose**. See Arabinose, bromo-, pentaacetate.
Aceto-6-bromo- β -piperonyl ethylamide, and its methyl ester and derivatives, A., 875.
2-Aceto-*p*-chloro-*o*-nitrophenylamidophenyl methyl sulphide, A., 486.
2-Aceto-*p*-chloro-*o*-nitrophenylamidophenyl methylsulphone, A., 486.
Acetodi- β -benzoyl ethylamide, and its derivatives, A., 355.
2-Aceto-*uran*-3:4-dicarboxylic acid, dimethyl ester, A., 867.

Acetohalogeno-sugars, action of mercury salts on, A., 200.
 Acetoin, rotatory dispersion of, A., 809.
 Acetol, formation of, from glucose, A., 734.
 manufacture of, from glycerol, (P.), B., 664.
 effect of hydrogen sulphite solutions on, A., 963.
 2:4-dinitrophenylhydrazones, A., 743.
 Acetomethylamide, tribromo-, A., 762.
 Aceto- α -naphthalide, 2-chloro-4-nitro-, A., 77.
 Aceto- β -naphthylamide, thiol-, and its complex metallic derivatives, A., 591.
 Acetone, formation of, from acetaldehyde and water, A., 963.
 by fermentation, A., 1541.
 production of, from acetaldehyde, (P.), B., 716.
 from acetylene, (P.), B., 139.
 infra-red spectrum of, A., 806.
 ultra-violet absorption spectrum of, A., 10, 562.
 ultra-violet absorption spectra of mixtures of benzene and, A., 428.
 ultra-violet absorption spectra of mixtures of hexane and, A., 145.
 fluorescence of, as test for oxygen, A., 595.
 photo-dissociation of, A., 1468.
 vapour, ionisation potential of, A., 1055.
 heat of vaporisation and saturated vapour pressure of, A., 21.
 partition of, between neutral glycerides, A., 685.
 mixtures of diphenyl or naphthalene and, and solubility of a third substance therein, A., 1457.
 vapour-liquid equilibrium in systems of, with *n*-butyl alcohol, B., 584.
 catalysis by silver ions of oxidation of, by persulphates, A., 939.
 photochemical decomposition of, A., 178, 713.
 thermal decomposition of, A., 67, 827.
 condensation of, with formaldehyde, A., 984.
 with pyrocatechol, A., 80, 339.
 coloured condensation products of, with furfuraldehyde, A., 984.
 reaction of, with deuterium oxide, A., 1328.
 heats of activation of reaction of, with iodine, A., 43.
 β -naphthoylhydrazones, A., 77.
m-nitrobenzhydrazide, A., 743.
p-nitrobenzoylhydrazones, A., 1259.
N-nitroguanylimine, A., 769.
 production of homologues of, B., 1036.
 removal of, from musts, (P.), B., 170.
 in tissues after injection, A., 647.
 analysis of, B., 714.
 determination of, A., 102, 998.
 in blood, A., 104.
 in mixtures with *n*-butyl and ethyl alcohols, B., 617.
 in urine, A., 513.
 determination in, of water, conductometrically, B., 1036.
 Acetone, *s*-dibromo-, and *s*-dichloro-, action of sodium and silver on ketals of, A., 1353.
 fluoro-, and its semicarbazone, A., 733.
 monohydroxy-. See Acetol.
 dihydroxy-, polymerisation of, A., 198.
 effect of hydrogen sulphite solutions on, A., 963.
 formation of methylglyoxal from, A., 67.
 fermentation of, A., 785, 1282.

Acetone, dihydroxy-, crystalline, biochemical preparation of, A., 1282.
 Acetonedicarboxylic acid, condensation of, with phenols and their ethers, A., 343, 353.
 ethyl ester, action of trimethylene bromide on, A., 1497.
 Acetonephosphoric acid, dihydroxy-, A., 403.
 formation of, from glyceraldehyde-phosphoric acid, A., 1164.
 action of, with hexosediphosphoric acid, A., 897.
 enzymic hydrolysis of, A., 1026.
 Acetone-*d*-tartaric acid, ethyl ester, and its optical activity, A., 1106.
 Acetonitrile, dipole moment of, A., 568.
 compounds of, with rhodium, A., 461.
 5-Acetodinitrophenylamido-2-hydroxy-diphenylamine, 2:4'-dinitro-, A., 484.
 2-Aceto-*o*-nitrophenylamido-1-naphthyl methyl sulphide, A., 486.
 2-Aceto-*o*-nitrophenylamidophenyl mercaptan, A., 486.
 2-Aceto-*o*-nitrophenylamidophenyl methyl sulphide, and 5-nitro-, A., 486.
 2-Aceto-*op*-dinitrophenylamidophenyl methyl sulphide, A., 486.
 2-Aceto-*o*-nitrophenylamidophenylmethylsulphone, and 5-nitro-, A., 486.
 Acetonuria in infectious disease, A., 775.
 3-Acetonilideneoxindole, irradiation of, and conversion into 2-methylquinoline-4-carboxylic acid, A., 356.
 3-Acetonil- β -naphthoxindole, 3-hydroxy-, A., 501.
 7-Acetoniloxycoumarin, A., 986.
 7-Acetoniloxycoumarin, 8-hydroxy-, A., 986.
 7-Acetoniloxo-4-methylcoumarin, A., 986.
 Acetonilisopropylidenebis- γ -methyltetronic acid, A., 898.
 Acetonilpyridinium bromide, A., 987.
 Acetonilquinolinium betaine and bromide, A., 988.
 Acetonilisoquinolinium betaine and bromide, A., 988.
 Acetophenone, and chloro-, determination of solubility of, A., 1314.
 electrolytic reduction of, A., 176.
 condensation of, with bromo- and chloro-vanillins, A., 214.
 reaction of, with formaldehyde and ammonium chloride, A., 355.
 synthesis of pyrrolones from benzoylformanilide and, A., 498.
 β -naphthoylhydrazones, A., 77.
n-nitrobenzoylhydrazide, A., 743.
p-nitrobenzoylhydrazones, A., 1259.
 and *m*-nitro-, *p*-nitrobenzoylhydrazones, A., 1259.
N-nitroguanylimine, A., 769.
 phenylhydrazones-*p*-sulphonic acid, aniline salt, A., 620.
o- and *p*-tolylhydrazones, A., 1251.
 Acetophenone, ω -bromo-, condensation of, with *s*-phenyl-*o*-aminophenylthiocarbamide, A., 1386.
 3:4-dichloro- ω -bromo-2-nitro-, A., 988.
 ω -fluoro-, and its pyridinium and quinolinium salts, A., 733.
o-hydroxy-derivatives, Kekulé forms of, A., 862.
o-hydroxy-, β -*d*-glucoside, A., 964.
 2:6-dihydroxy-, dibenzoyl derivative, A., 220.
 2: ω -dihydroxy-, A., 1507.
m-nitro-, *o*-tolylsemicarbazone, A., 1259.
 $\omega\omega$ -dihalogeno-derivatives, condensation of, with alkali, A., 1367.
 ω -nitro-derivatives, A., 616.

Acetophenones, substituted, acid- and base-catalysed prototropy of, A., 1209.
 Acetophenone- ω -sulphonic acid, and its salts, A., 84.
 Acetopyrocatechol, ω -chloro-, thiazole derivatives from, A., 1511.
 α -Aceto- β -1-*r*-rhamnosido-6-*d*-glucose, α -chloro-, A., 1110.
 ω -Acetothienopyridinium bromide, A., 988.
n-Aceto-*p*-toluidide, nitration of, (P.), B., 396.
 Acetoximo *p*-toluenesulphonate, A., 345.
 5-Acetoxy-9-acetyl-1-methyldihydronic acid, 4-chloro-, and its derivative from action of air, A., 361.
 3-*epi*Acetoxylation alcohol-17-ol, A., 346.
 β -Acetoxy- Δ^2 -butadiene, and its derivatives, A., 1221.
 α -Acetoxyisobutyric acid, β -methoxyethyl, methyl, and β -phenoxyethyl esters, A., 960.
 methyl ester, (P.), B., 716.
d- π -Acetoxycamphor, and its semicarbazide, A., 89.
 3-Acetoxy- Δ^8 -cholenic acid, A., 1125.
 5-Acetoxy-3:7-diacyl-1-methylhydantamide, A., 96.
 11-Acetoxy-2:2'-diethylidibenzthiatetracarboyanines, perchlorates of, A., 634.
 13-Acetoxy-1:1'-diethyl-2:2'-pentacarbo-cyanine perchlorate, A., 634.
 13-Acetoxy-1:1'-diethyl-2:2'-tetracarbo-cyanine perchlorate, A., 634.
 11-Acetoxy-2:2'-diethylthiatetracarbo-cyanine perchlorate, A., 634.
 11-Acetoxy-2:2'-diethylthiatetracarbo-cyanine perchlorate, A., 634.
 2-Acetoxy-3:4-dimethoxyphenyl α - β -dibromo- β -nitrophenylethyl ketones, A., 86.
 5-Acetoxy-1:3-dimethylbarbituric acid, 5-amino-, acetyl derivative, A., 96.
 4-Acetoxy-5-ethoxy-1:3-dimethyl-4:5-dihydric acid, A., 96.
 ζ -Acetoxyhexyldiethylamine, A., 990.
 Acetoxymercuri-*m*-cresol, A., 997.
 α -Acetoxymercuri- β -methoxy- β -phenyl-ethane, A., 1515.
 4-Acetoxy-6:7-methylenedioxy-2-thion-3-tolyl-1:2:3:4-tetrahydroquinazolines, A., 630.
 4-Acetoxy-2-nitroanisole, A., 997.
 Acetyl bromide, absorption spectrum of, A., 913.
 chloride, and trichloro-, absorption spectra of, 913.
 action of, with saturated hydrocarbons, A., 1221.
 on methyl sulphate, A., 733.
 groups, stability of, A., 472.
 peroxide, decomposition of, A., 472.
 Acetylacetone, action of, with disiloxan, A., 333.
m-nitrobenzhydrazide, A., 743.
p-nitrobenzoylhydrazones, A., 1259.
 2-Acetyl-5-acetoxybenzylidenecreatinines, A., 850.
 α -Acetyl- α -acetoxyisobutyramide, A., 960; (P.), B., 716.
 2-Acetyl-5:3'-acetoxy-4'-methoxybenzylidenecreatinine, A., 850.
n-Acetyl- β -aminoethyl alcohol, A., 995.
 Acetylammoresinol, and its hexahydro-derivative, A., 219.
o-Acetyl-9-anilinoanthran-10-ol-1-carboxylactam, A., 869.
 Acetylarsenocholine, pharmacology of, in relation to acetylcholine, A., 1411.
n-Acetylbenzenesulphon-*p*-aminoanilide, and its *d*-camphor-10-sulphonate, A., 1118.

n-Acetylbenzenesulphon-*p*-nitroanilide, A., 1118.
 Acetylbenzilhydrazide, A., 211.
 3-Acetylbenzoic acid, 2:4:6-tribromo-, and its ω -bromo- and ω -chloro-derivatives, A., 751.
 Acetylbenzoyl peroxide, manufacture of, (P.), B., 1131.
 2-Acetyl-5-benzylcreatinine, A., 850.
trans-*n*-apo-isoAcetylbornol-7-carboxylic acid, A., 350.
N-Acetyl-5-bromocotarnidineacetic acid, and its silver salt, A., 1513.
 Acetylcarbamic acid, β -chloroethyl ester, A., 1228.
 Acetylcarbamylcholine chloride, A., 1228.
 9-Acetylcarbazole, 3-amino-, and trinitro-, A., 634.
 3-Acetyl-5-carbomethoxy-2:4-dimethylpyrrole oxime, A., 994.
 3-Acetyl-5-carbomethoxy-2:4-dimethylpyrrole, A., 994.
 5-Acetylcarvacrol, 3-amino-, A., 1232.
 Acetylcholine, action of, A., 1283.
 potential action of, A., 1421.
 chloride, and its acetate, (P.), B., 287.
 flavianate, A., 639.
 response of leeches to, A., 894.
 substance like, in adrenals, A., 232.
 destruction of, by blood, A., 1279.
 in brain, A., 115.
 action of, on sympathetic ganglia, A., 529.
 with sterols in tissues, A., 1156.
 content of, in muscle, A., 1003.
 in heart muscle after vagus stimulation, A., 116.
 in nerves, brain and spinal cord, A., 376.
 as transmitter of nerve impulses, A., 244.
 substance sensitising to, formed in pneumogastric nerve, A., 656.
 destruction of, by organs of frog, guinea-pig and snail, A., 1163.
 in saliva, A., 1399.
 in serum and embryonic extracts, A., 103.
 effect of, on refractive index of serum, A., 780.
 in tissues of invertebrates, A., 1522.
 Acetylcoltarine, oxime, acetylated, A., 1388.
 6-Acetylcoumarin, 7:8-dihydroxy-6-chloro-, A., 1376.
 8-Acetylcoumarin, 7-hydroxy-, and its oxime, A., 986.
 Acetyldibenzofuran, 3-bromo-, and 3-chloro-, A., 986.
 Acetyldihydrobrucinolones, A., 1389.
 Acetyldihydrocincholinol, A., 1242.
 Acetyldihydrokryptobrucinoline, A., 1389.
 Acetyldihydroisocallotephrosin, A., 221.
 6-Acetyl-1:8-dimethylallantoin, A., 226.
 9-Acetyl-1:7-dimethylspirodihydantoin, A., 226.
 4-Acetyl-1:1-dimethyl-2-ethylcyclobutane, and its derivatives, A., 1375.
 5-Acetyl-2:4-dimethyl-3-ethylpyrrole, A., 632.
 3-Acetyl-2:4-dimethylpyrrole, oxime, A., 994.
 Acetyl-3:5-dimethylpyrazoles, A., 1508.
 1-Acetyl-3:5-dimethylpyrazole-4-carboxylic acid, and its ethyl ester, A., 1508.
 3-Acetyl-2:4-dimethylpyrrole-5-carboxylic acid, butyl ester, A., 631.
 3-Acetyldimethyl-5:6:7:8-tetrahydroquinolines, and their derivatives, A., 222.
 7-Acetyldimethylisouric acids, 5-chloro-, A., 361.
 Acetyldiphenylchloroacetylhydrazide, A., 211.

Acetyldiphenylethoxyacetylhydrazide, A., 211.
 Acetylene, vibrational structure of, A., 681.
 electron configuration of, A., 1188.
 isotope effect in, A., 562.
 isotopic exchange between water or heavy water and, A., 713.
 formation of, by action of high-frequency discharge on ethylene, A., 192.
 production of, (P.), B., 343.
 from calcium carbide, B., 835.
 from liquid hydrocarbons, by arcing, B., 1052.
 from natural gas, (P.), B., 343.
 pressure in high-pressure plants for, B., 613.
 infra-red absorption spectrum of, A., 1053.
 ultra-violet absorption spectrum of, A., 562, 913.
 ionisation of, by electron impact, A., 5, 1305.
 adsorption of, by Hoesvay's reagent, A., 293.
 influence of high-frequency fields on combustion of mixtures of air and, A., 831.
 explosion of, B., 835.
 photobromination of, A., 48.
 hydrogenation of, to ethylene, B., 394.
 catalytic hydrogenation and polymerisation of, B., 394.
 low-temperature hydrogenation and polymerisation of, A., 325.
 oxidation of, (P.), B., 182.
 polymerisation of, B., 394.
 catalysis of, by mercury vapour, A., 1208.
 mercury-photosensitised polymerisation of, A., 943.
 polymerisation and hydrogenation of, A., 1082.
 polymerides of, and their derivatives, A., 1480.
 tetrameride of, A., 1221.
 trimeric compound of, A., 957.
 pyrogenic condensation of ethylene and, B., 442.
 production of condensation products of, (P.), B., 618.
 reaction of, with sulphur, A., 325.
 and its dimagnesium derivative, reaction of, with ketonic terpenes, A., 349.
 derivatives, A., 1118.
 Raman effect of, A., 146.
 manufacture of esters from, (P.), B., 619.
 production of liquid hydrocarbons from, B., 394.
 coating composition from polymerides of, (P.), B., 320.
 containing heavy hydrogen. See Deuteracetylene.
 removal of, from gases, (P.), B., 393.
 from gaseous hydrocarbons, (P.), B., 1127.
 determination of, by modified Chavaleston method, B., 394.
 in generator water, B., 756.
 Acetylenes, A., 193.
 formation of peroxides by, A., 325.
 aliphatic, physical properties of, A., 192.
 Acetylene series, A., 604.
 Acetylenedicarboxylic acid, preparation of, from fumaric acid, A., 846.
 esters, adducts from quinaldine and from hydrazo-compounds and, A., 1251, 1252.
 dimethyl ester, derivatives of, with stilbazole, A., 500, 501.
 ethyl ester, diene synthesis with, A., 618.
 Acetylenic compounds, dielectric properties of, A., 683, 1056.

Acetylenyldivinyl. See $\Delta^{4\pi\pi}$ -Hexadieneinene.
 9-Acetyl-4-ethoxy-5-acetoxy-1-methylidihydric acid, A., 361.
 4-Acetyl-4'-ethylidiphenylamine, 2-nitro-, A., 990.
 Acetylsocugenol ψ -nitrosite, and its dimeride, A., 1362.
 6-Acetylflavone, 5-hydroxy, A., 220.
 9-Acetylfluorene, and its oxime, A., 741.
 2-Acetylfluorenone-7-carboxylic acid, and its derivatives, A., 346.
 Acetylglycollic acid, neutral salt action in reaction of, with hydroxyl ions, A., 709.
 Acetylhydrazinodiphenylmethane, A., 78.
 β -*N*-Acetylhydroxylamino- α -*p*-acetoxy-*m*-methoxyphenylpropyl alcohol, A., 1362.
 2-Acetyl-5-hydroxybenzylcreatinines, A., 850.
 2-Acetyl-5-3'-hydroxy-4'-methoxybenzylcreatinine, A., 850.
 7-Acetyl-5-hydroxy-9-methylidihydric acid, 4-chloro-, A., 361.
 Acetylisinglic acid anhydride, A., 543.
 3-Acetyl-lithocholic acid, ethyl ester, A., 1494.
 Acetylmandelic acids, *o*-nitro-, A., 356.
 Acetyl- α -matrinidine, derivatives of, A., 766.
N-Acetyl-1-menthylaminoacetic acid, A., 89.
 9-Acetyl-4-methoxy-5-acetoxy-1-methylidihydric acid, A., 361.
 2-Acetyl-5-methoxybenzylcreatinines, A., 850.
 2-Acetyl-5-methoxybenzylidenecreatinines, A., 850.
 4'-Acetyl-5-methoxy-3:3':5'-trimethyl-4- β -carboxyethylpyrromethene ketoxime, A., 632.
 1-Acetyl-3-methylallantoin, A., 225.
 1-Acetyl-3-methylallantoin-5-carboxylic acid, derivatives of, A., 225.
 5-Acetylmethylamino-1-acetyl-3-methylhydantoin, A., 223.
 Acetylmethylbindone, A., 623.
 1-Acetyl-7-methylcafolide, A., 361.
 Acetylmethylcarbinol (*dimethylketol*), A., 1516.
 effect of, on flavour of bread, B., 652.
 in dairy products, B., 521.
 Acetyl- β -methylcholine, effect of, on adrenaline action on ventricles, A., 1421.
 on gastric acidity in monkeys, A., 1411.
 3-Acetyl-2-methylchromone, 5:7-dihydroxy-, and its diacetate, A., 90.
 1-Acetyl-3-methylspirodihydantoin, A., 225.
 Acetyl-3-methyldiketohydriene 2-oxime, and its derivatives, A., 980.
 2-Acetyl-3-methyl-4-ethylpyrrole, and 5-bromo-, A., 632.
 γ -Acetyl- ζ -methyl- Δ^8 -heptadiene, and its semicarbazone, A., 605.
 1-Acetyl-3-methylhydantoin, 5-diamino-, diacetyl derivative, A., 223.
 5-Acetylmethylisopropylazobenzenes, 4'-nitro-2-hydroxy-, A., 1232.
 3-Acetyl-2-methyl-4:5:6:7-tetrahydroindole, and its salts, A., 870.
 3-Acetyl-2-methyl-5:6:7:8-tetrahydroquinoline, and its derivatives, A., 222.
 Acetyl-3-methylthiophens, *mono*- and *di*-bromo-, A., 355.
 5-Acetyl-1-methyluracil, A., 358.
 Acetyl-1-methyluric acids, and their derivatives, and chloro-, A., 361.
 1-Acetyl-*lin*-naphthatriazole, and 1-chloro-, A., 761.
 Acetyl-2':3'-naphthiminazolones, A., 762.
 3-Acetyl- β -naphthol, 3-chloro-, A., 858.
 1-Acetyl-2-naphthyl benzoate, A., 1129.

- N*-Acetyl-3-nitrotyrosine, *N*-bromo-, and its methyl ester, A., 1122.
- Acetylnorlithocholic acid, A., 1494.
- α -Acetyl- α -octylglutaric acid, diethyl ester, A., 1352.
- Acetyloleanolic acid, oxidation of, A., 865.
- Acetyloleanolo- γ -lactone, δ -hydroxy-, and its acetyl derivative, A., 865.
- N*-Acetylpegadiene, A., 873.
- 1-Acetylcyclopentane-3-carboxylic acid, methyl ester, and its semicarbazone, A., 1245.
- 1-Acetylcyclopentene, and its semicarbazone, A., 1499.
- 9-Acetylphenanthrene, and its picrate and oxime, A., 741.
- p*-Acetylphenyl-*p*-benzoquinone, A., 86.
- Acetylphenylcarbinol, tautomerism of benzoylmethylcarbinol and, A., 622.
- N*-Acetylphenyl-4'-chlorophenylcarbamide, and 4-bromo-, and 3-nitro-, A., 1118.
- 5-Acetyl-1-phenyl-4'-ethylbenzotriazole, A., 990.
- Acetylphenylglycines, chloro-, A., 332.
- 4-Acetyl-1-phenylcyclohexane, and its semicarbazone, A., 1368.
- 3-Acetyl-1-phenylcyclopentane, and its semicarbazone, A., 1368.
- p*-Acetylphenylquinol, A., 87.
- 5-Acetyl-1-phenyluracil, A., 358.
- Acetylphosphocholine, pharmacology of, in relation to acetylcholine, A., 1411.
- Acetylphthalimide, decomposition of, A., 748.
- 3-Acetylpiperidine hydrochloride, A., 499.
- 2-Acetyl-5-piperonylcreatinine, A., 850.
- 2-Acetyl-5-piperonylideneacreatinine, A., 850.
- Acetylisopropylidenedihydroshikimamide, A., 1365.
- 3-Acetyl-4-2'-pyridyl-2-methylpyrrole, and its perchlorate, A., 1253.
- 3-Acetyl-4-2'-pyridyl-2-methylpyrrole-5-carboxylic acid, and its ethyl ester, and its derivatives, A., 1253.
- Acetylprocatechol, chloro-, preparation of, A., 1126.
- 2-Acetylpyrrole in stabilised official valerian, A., 551.
- Acetylpyrromethenes, synthesis of, A., 632.
- Acetylreteneanol, salts of, A., 365.
- Acetylsalicylic acid (*o*-acetoxybenzoic acid; *aspirin*), and its salts, chemistry and pharmacology of, B., 1022.
- mixture of calcium gluconate and, (P.), B., 749.
- o*-hydroxydiphenyl ester, A., 1233.
- poisoning by. See under Poisoning.
- determination of, B., 173.
- Acetylsalicyl chloride, action of, on magnesiumlindoles, A., 1379.
- Acetylsukesoic acid anhydride, A., 543.
- Acetyltetramethyl-*dl*-isocatechin, and bromo-, A., 868.
- α -Acetyltetronic acid, and its derivatives, A., 327.
- N*-Acetylthiodiphenylamine, 3-nitro-, A., 1511.
- 5-Acetylthiol-2:4-dimethylpyrrole-5-carboxylic acid, ethyl ester, A., 627.
- 2-Acetyl-1-thionaphthen, 3-hydroxy-, *p*-bromophenylhydrazone, A., 763.
- 3-Acetylthiophen, 2:5-dibromo-, A., 355.
- 6-Acetylthymol, 2-amino-, A., 1232.
- Acetyltri-indole, dinitroso-, A., 503.
- β -Acetyl- β -trimethylacetyl- α -diphenylpropane, A., 198.
- α -Acetyl- α -trimethylacetylpentane, A., 198.
- α -Acetyl- α -trimethylacetyl- β -phenylethane, A., 198.
- α -Acetyl- α -trimethylacetylpropane, A., 198.
- 3-Acetyl-2:4:6-trimethylbenzoic acid, 3-diiodo-, A., 979.
- 4'-Acetyl-3:3':5'-trimethyl-4- β -carboxyethylpyrromethene, 5-bromo-, hydrobromide ketoxime hydrobromide of, A., 632.
- 7-Acetyl-1:3:9-trimethyldihydrouric acid, 4-amino-5-hydroxy-, 4:5-dichloro-, and 4-chloro-5-hydroxy-, acetyl derivative, A., 361.
- 2-(3-Acetyl-2:4:6-trimethylphenyl)-1:4-naphthaquinone, 3-hydroxy-, A., 1126.
- 6-Acetyl-2:3:4-tri-*p*-toluenesulphonyl- β -methylglucoside, 6-dichloro-, A., 1225.
- 2-Acetyl-5-veratrylcreatinine, A., 850.
- 2-Acetyl-5-veratrylideneacreatinine, A., 850.
- Achillea filipendulina*, oil from, B., 333.
- Achillea millefolium*, essential oil of, B., 429.
- Achlorhydria, experimental production of, A., 1400.
- Achras zapota*, storage temperature of, B., 1162.
- Acid, $C_{12}H_{10}O_6$, from degradation of picrotic acid, A., 1496.
- $C_{11}H_{14}O_6$, from degradation of picrotic acid, A., 1496.
- $C_{14}H_{14}O_8$, and its dinitrophenylhydrazones, from methylglyoxal and acids, A., 67.
- $C_{17}H_{12}O_8$, and its ethyl ester and derivatives, A., 1130.
- $C_{20}H_{32}O_{12}$, and its esters, from degradation of digitoxigenin, A., 88.
- $C_{21}H_{22}O_8$, and its derivatives, from *p*-methylcresol and acetonedicarboxylic acid, A., 343.
- $C_{22}H_{12}O_{12}$, from crucodibromobehenic acid and alcoholic potash, A., 195.
- Acids, calculation of formulae of, A., 917.
- evaporators for concentration of, (P.), B., 610.
- pumps resistant to, (P.), B., 706.
- conductivities of, in pyridine, A., 1462.
- ionisation constants of, in ethyl alcohol, A., 1321.
- acidity potential of, A., 38.
- dissociation constants of, in light and heavy water, A., 1203.
- strength of, A., 33.
- cement resistant to, (P.), B., 950.
- resistance of cement pipes to, B., 1096.
- resistance of enamel ware to, B., 22.
- corrosion of iron by, B., 633.
- in presence of hydrogen sulphide and sulphur dioxide, B., 1048.
- manufacture of unsaturated derivatives of, (P.), B., 715.
- potentiometric titration of, A., 182.
- Acids, acetylenic, dielectric constants of, A., 1056.
- alcoholic and phenolic, colour changes in cyclisation of, A., 621.
- aliphatic, concentration of, (P.), B., 262.
- cyclic oxidation of alcohols to, (P.), B., 138.
- monobasic, distribution of, between water and *o*-nitrotoluene, A., 695.
- ethyl esters, heats of crystallisation of, A., 21.
- monocarboxylic, production of esters of, (P.), B., 620.
- saturated, distribution of, between two contiguous liquid phases, A., 1068.
- higher, mol. wts. of cellulose esters of, A., 965.
- normal, double refraction of interfacial layers of, A., 1452.
- Acids, aromatic, carboxylic, manufacture of, (P.), B., 621.
- diabasic, primary dissociation constants of, A., 302.
- action of semicarbazides on anhydrides of, A., 618.
- glycol esters of, A., 327.
- electrometric titration of, A., 1076.
- polybasic, dissociation constants of, A., 934.
- and their derivatives, use of, in paints, B., 511.
- carboxylic, constitution and dissociation constants of, A., 165, 581.
- production of, (P.), B., 262, 297, 397, 939.
- and their derivatives, (P.), B., 219.
- concentration of, (P.), B., 796.
- effect of substitution on dissociation constants of, A., 1076.
- comparative activity of alcohols and, A., 38.
- conversion of, into their higher homologues, A., 342.
- esterification of, A., 828.
- complex ferric compounds with, A., 461.
- manganese salts, manufacture of, (P.), B., 1166.
- hypohalogenites of, A., 1222.
- heterocyclic, and their salts, production of, (P.), B., 1134.
- polymeric, manufacture of salts of, (P.), B., 264.
- α -substituted, rotatory dispersion curves of, A., 14.
- monocarboxylic, production of, and their derivatives, (P.), B., 443.
- from dicarboxylic acids, (P.), B., 140.
- dicarboxylic, dissociation constants of, A., 33.
- primary dissociation constants of, A., 33.
- manufacture of esters of, (P.), B., 762.
- identification of, A., 507.
- o*-dicarboxylic, ψ -chlorides and ψ -esters of, A., 1123.
- polycarboxylic, mercuration and decarboxylation of, A., 748.
- esters of, (P.), B., 1132.
- complex, A., 34.
- cyclic, unsaturated, additive reactions and tautomeric changes of, A., 617.
- fatty, production of, from fats, (P.), B., 417.
- and their salts, recovery of, from oxidation of petroleum products, (P.), B., 939.
- m.p. and crystal structure of, A., 152.
- distillation of, B., 462; (P.), B., 238.
- crystals from solidification of, A., 1523.
- solid, fractional distillation of, under reduced pressure, B., 1054.
- adsorption of, by serum-proteins, A., 373.
- surface potential differences of uni-molecular films of, A., 1458.
- diffusion of, in presence of cholate, A., 1202.
- cataphoresis of particles of, A., 1075.
- oxidation of, in alkaline phosphate-hydrogen peroxide, A., 114.
- in vitro*, A., 1106.
- and their esters, reduction of, to alcohols, (P.), B., 1003.
- and their esters, conversion of, into higher alcohols, B., 1149.
- sodium salts, influence of atmospheric carbon dioxide on surface tension of, A., 161, 294.

- Acids, fatty, reduction of bromides of, A., 845.**
 manufacture of sulphonated alcohol esters of, (P.), B., 262.
 sulphated condensation products of ethanolamine and, (P.), B., 939.
 oxidation of phenyl derivatives of, A., 1121.
 and their soaps, insecticidal value of, B., 647.
 and their esters and salts, preservation of, (P.), B., 1150.
 and their esters, biological degradation of, A., 1151.
 chloro-substituted, and their esters, heats of combustion and refractivity of, A., 449.
dicarboxylic, normal, polymorphism in, A., 1351.
 higher, distillation of, (P.), B., 68.
 and their salts, unimolecular layer films of, A., 931.
 magnetic rotation of salts of, A., 148.
 esters, condensation of, with 2:6-dimethylol-*p*-cresol, A., 746.
 naturally-occurring, B., 560.
 unsaturated, methyl esters, polymerisation of, A., 473.
iodo-. See Iodo-acids, fatty.
 saturated, distribution of, between water and toluene, A., 441.
 periodicity in solubility of substances in, A., 1068.
 saturated and unsaturated, in phospholipins, A., 1397.
 unsaturated, and their derivatives, A., 195.
cis-trans isomerism of, B., 1149.
 polymerisation of, A., 1350.
 oxidising hydrolysis of, A., 472.
 solid, determination of, in presence of saturated acids, B., 732.
 degradation of, in the organism, A., 390.
 volatile soluble, absorption of, in blood, A., 390.
 iodometric analysis of mixtures of colophony and, B., 1101.
 determination of, volumetrically, in soaps, B., 683.
 determination in, of free hydroxyl groups, B., 1054.
 inorganic, electronic structure of, A., 431.
 charts for specific volumes of, B., 542.
 olefinic, A., 617.
 optically active, A., 1127.
 organic, production of, (P.), B., 939.
 from aldehydes and alcohols, (P.), B., 619.
 by alkaline fusion of cellulose materials, (P.), B., 715.
 by fermentation, B., 520.
 dissociation constants of, A., 302, 1076.
 effect of *o*-substitution on dissociation of, A., 1076.
 effect of polarity on solubility of, A., 695.
 physico-chemical properties of solutions of, in liquid hydrogen fluoride, A., 582.
 reaction of, with aromatic carbimides, A., 336.
 metallic salts, structure and oil solubility of, B., 584.
 salts, assay of, A., 507.
 esters, reaction of, with mixed magnesium organic compounds, A., 64.
 formation and degradation of, by moulds, A., 124.
- Acids, organic, toxicity of, to plants, A., 674.**
 saturated, distribution of, between two liquid phases, A., 577.
 with uneven number of carbon atoms in vegetable oils and fats, A., 1435, 1550.
 micro-copper-pyridine reaction for, A., 998.
 titration of, with ferric chloride, A., 1140.
 containing oxygen, complex ions of, in solution, A., 582.
 of *isopropyl* and *isobutyl* series, relation of, to acids of normal series, A., 1482.
 saturated, tertiary carboxylic, preparation of, A., 1128.
 sparingly soluble, influence of hydrophilic colloids on solubility of, A., 929.
 strong, conductivity of, in mixtures of light and heavy water, A., 1324.
 of sugar group. See Sugar acids.
 of type $\text{CHIRR}'\text{CO}_2\text{H}$, rate of racemisation of, A., 1083.
 unsaturated, electroreduction of, A., 1205.
 of natural oils, A., 607.
 C_{22} , separation of, A., 1482.
 weak, complex formation involving, A., 305, 449.
 potentiometric titration of, A., 1214.
Acid amides. See Amides.
Acid chlorides, preparation of, by reaction between thionyl chloride and acids, A., 341.
 manufacture of, (P.), B., 13.
 condensation of, with benzaldehyde, A., 1497.
 reactions of, with sodium enolates, A., 474.
 aliphatic, chlorination of, A., 174.
dicarboxylic, manufacture of, (P.), B., 762.
Acid halides, production of, (P.), B., 397.
Acid-base balance, A., 404, 640.
 influence of glucose on, A., 392.
 effect of organic acids on, A., 392.
 effect of sodium chloride on, A., 524.
 determination of, from urine analysis, A., 648.
Acidity, electrostatic factors affecting, A., 303.
 relation between tautomerism and, A., 334.
Acidosis, relation of, to salts, A., 243.
 to intermediary metabolism, A., 524.
 experimental, A., 1007.
Aconite, deterioration and stabilisation of preparations of, B., 79.
 Napel, infection of, with *Septoria lycotoni macrospora*, A., 1436.
Aconite alkaloids, determination of, A., 102.
Aconitic acid, formation of, from shikimic acid, A., 1365.
 colour reaction for, A., 1516.
Aconitidialdehyde di-2:4-dinitrophenyl-hydrazone, A., 1365.
Aconitine, biological assay of, and its absorption from ointments, A., 119.
Aconitum napellus, alkaloids of, B., 1022.
Acorn oil, Indian, A., 267.
Acraldehyde (acrolein), absorption spectrum of, A., 914.
 ultra-violet absorption spectrum of, A., 145.
 thermal decomposition of, A., 172, 1464.
 reaction of, with *alloocimene*, A., 1246.
m-nitrobenzhydrazide, A., 743.
Acridic acid, dyes derived from, A., 1506.
Acridine, and its derivatives, A., 1251.
- Acridine**, derivatives, production of, (P.), B., 1165.
 ultra-violet photobiological sensitisation of, A., 1275.
N-oxides, A., 1251.
Acridine, 2- and 3-amino-, A., 638.
diamino, determination of, in eufllavine, B., 877.
 2-thiol-, A., 1380.
Aeridine-2-sulphonamide, 9-amino-, A., 1380.
Acridine-2-sulphonic acid, and its barium salt and derivatives, A., 1380.
Acridine-2-sulphonyl chloride, 9-chloro-, and its derivatives, A., 1380.
Acridinium compounds, manufacture of, (P.), B., 1069.
Acridinium salts, compounds of, (P.), B., 124.
 "Acridols," A., 1251.
Acridone, sulphonation of, A., 1380.
Acridone-2-sulphonic acid, ethyl ester, A., 1380.
Acridonesulphonic acids, and their barium salts, A., 1380.
 1-Acritylarsine oxide, A., 637.
 1-Acritylarsinic acid, and its salts, A., 637.
 2-Acrityl-9-arsinic acid, 2-amino-, and its salts, A., 638.
Acritylarsinic acids, and their derivatives, A., 637.
Acrityldichloroarsines, hydrochlorides of, A., 638.
Acriflavine, purification of, B., 253.
 B.P. and neutral, analysis of, B., 253.
Acromegaly, energy requirement in, A., 235.
 with osteoporosis, calcium and phosphorus metabolism in, A., 1400.
Acrylic acid, and its derivatives, production of polymerides of, (P.), B., 467.
 esters, manufacture of, (P.), B., 138.
 manufacture of sheets of polymerisation products of, (P.), B., 1005.
 benzyl and *n*-butyl esters, A., 607.
 ethylene glycol ester, manufacture of, (P.), B., 368.
Acrylic acid, α -amino-, benzoyl derivative, and its azlactone, A., 974.
cis- and *trans*- β -chloro-, A., 473.
polyAcrylic acid, cryolysis and diffusion of, A., 932.
Acrylic acids, amino-, benzoyl derivatives, reduction of, in Erlenmeyer synthesis, A., 489.
Acryl-o-toluidide, A., 1386.
Actinia equina, carotenoids of, A., 1005.
Actiniasterol, and its derivatives, A., 1398.
Actinium, A., 910.
 α -, β -, and γ -rays from, A., 1440.
 β -rays from, A., 558, 1295.
 branching ratio in separation of, from minerals, A., 1440.
 constancy of ratio of uranium to, in minerals, A., 322.
Actinodaphne Hookeri, production of detergent from fat of, B., 30.
Actinoloba dianthus, carotenoids of, A., 1005.
Actinometer, precision, ultra-violet, A., 1097.
Actinometry, uranyl oxalate solutions for, A., 47.
Actinomyces, nitrogen fixation in soils by, B., 514.
Activity coefficients of strong and weak electrolytes, A., 702.
 of gases, A., 575, 823.
 of mixed solutions, and Gibbs-Duhem and Gibbs-Margules formulae, A., 302.

- Acyl chlorides.** See Acid chlorides. groups, wandering of, A., 972. in *o*-aminophenol derivatives, A., 1361.
- N*-Acyl- β -aminoethyl alcohols,** synthesis of Δ^2 -oxazolines and Δ^2 -thiazolines from, A., 995.
- Acylazotriphenylmethanes,** thermal fission of, A., 77.
- cis*-3-Acylideneoxindoles,** formation of substituted cinchonic acids from, A., 356.
- Acylmethylisopropylphenols,** A., 1369.
- 1-Acyloxy-2-acetonaphthones,** reaction of, with sodamide, A., 90.
- o*-Acyloxyacetophenones,** action of sodamide on, A., 1129.
- Adaline.** See α -Ethylbutyrylcarbamide, α -bromo-.
- Adamite** from Gold Hill, Utah, A., 956.
- Addison's disease,** effect of treatment of, on skin pigmentation, A., 107. effect of cortical hormone on glucose and lactic acid in blood in, A., 650.
- Adenine,** heat capacity, entropy, free energy, and heat of combustion of, A., 1324. non-identity of, with vitamin- B_4 , A., 416. determination of, in presence of guanine, A., 232.
- Adenine-nucleotide,** determination of, in human blood, A., 373.
- Adenosine,** fate of, in dogs, A., 113.
- Adenosinephosphoric acid,** manufacture of, (P.), B., 878.
- Adenosinetriphosphoric acid,** constitution of, A., 1004. structure and biological activity of, A., 244. formation of, A., 778. synthesis of, in relation to transformation of dihydroxyacetonephosphoric ester, A., 122. re-synthesis of, A., 250. aerobic re-synthesis of, by erythrocytes of birds, A., 640. in living yeast, A., 1418. as activator of glycolysis, A., 1278. transformation of, in frog's heart, A., 109. enzymic decomposition of, in heart muscle, A., 122. transformation of, in muscle, A., 778. determination of, A., 1004.
- Adenyl pyrophosphate.** See Adenosinetriphosphoric acid.
- Adenylic acid,** influence of bile acids on phosphorylation of, in liver and muscle, A., 1158. diphosphorylation of, in muscle, A., 1150. in the central nervous system, A., 1005.
- Adenylic acid deaminase,** action of, on co-enzyme, A., 1278.
- Adhesions,** intraperitoneal, efficacy of substances for prevention of, A., 513.
- Adhesives,** (P.), B., 242, 323, 564, 636, 739, 740, 865, 963, 1106. production of, (P.), B., 110, 115*, 138, 371, 420, 642, 645, 916, 917. from sodium silicate, (P.), B., 1092. use of, on absorbent surfaces, (P.), B., 740. for cellophane, etc., (P.), B., 739. for cigarette wrappers, B., 1155. for backing of flexible abrasives, (P.), B., 242. for glass, wood, etc., (P.), B., 1059. for stamps, etc., (P.), B., 163. casein, production of, (P.), B., 740. for wood, (P.), B., 470. for plywood, etc., (P.), B., 371. nitrocellulose, (P.), B., 281, 642.
- Adhesives,** from chlorinated polyphenols, (P.), B., 281. cold-water-soluble, manufacture of, from starch, (P.), B., 645. dry, production of, (P.), B., 963. from rubber or rubber latex, (P.), B., 739. containing rubber, (P.), B., 115, 163, 686. from rubber latex, (P.), B., 468.
- Adhesive foil,** manufacture of, (P.), B., 163.
- Adhesive sheets,** manufacture of, (P.), B., 799, 800.
- Adhesive tape,** manufacture of, (P.), B., 799, 800, 1140.
- Adina cordifolia,*** yellow colouring matter from wood of, A., 1129.
- Adinin,** and its salts, A., 1129.
- Adipic acid,** use of, as volumetric standard, A., 462. cetyl ester, A., 730. di- β -acetoxyethyl ester, A., 327. methyl hydrogen ester, peroxide of, A., 607. *p*-nitrobenzyl ester, A., 81. polymethylene and triethyleno glycol esters, A., 845. derivatives, manufacture of, (P.), B., 297.
- Adipic acid, $\alpha\beta$ -dibromo-,** A., 196. $\alpha\beta$ -dibromo-, and $\alpha\beta$ -dihydroxy-, A., 746. tetrahydroxy-, and its diethyl ester and lactones, A., 1483.
- meso*Adipic acid, $\alpha\alpha'$ -dihydroxy-,** derivatives of, A., 328.
- Adipo-*n*-amylamide,** A., 70.
- Adipodimethylanilide,** (P.), B., 1133.
- Adipodinitrile,** condensation of, with phloroglucinol and resorcinol, A., 1372.
- Adiptylperidine,** A., 71.
- Adonis,*** pharmacology of, A., 117.
- Adonis vernalis,*** extraction of active principles of, B., 573. cardiac-active substances from, A., 1019. stable concentrated preparations of, B., 828.
- d*-Adonose *o*-nitrophenylhydrazon,** A., 329.
- Adrenals,** A., 666, 789. histochemistry of, A., 1263. perfusion of, and adrenaline stabilisation, 789. water intoxication and diuresis in insufficiency of, A., 1528. effect of oestrin on, A., 1425. action of anterior pituitary on, A., 667. relation of, to thyroid, A., 410. substance like acetylcholine in, A., 232. ascorbic acid in, after death, A., 1036. distribution of vitamin-*C* in, A., 1036. in fatigue, cholesterol content of, A., 523. atrophied, effect of amniotin on, A., 791. ox, fatty acids of phosphatides of, A., 233. rat's, adrenaline content of, A., 1173. insufficiency in, A., 1173.
- Adrenal cortex,** effects of ectomelia, starvation, heat, and cholesterol feeding on, A., 516. action of extracts of, A., 665. influence of, on blood-sugar, A., 789. effect of stimulation of, on vitamin-*A* in blood, A., 1173. relation of, to carbohydrate metabolism, A., 1530. to electrolyte metabolism, A., 237. to anterior pituitary, A., 789. fat and lipin content of, in pregnancy and in splenectomy, A., 645.
- Adrenal cortex, hormone of.** See under Hormones. water loss in insufficiency of, A., 1421. standardisation of extracts of, A., 539. effect of glycerol extracts of, on schizophrénics, A., 518.
- Adrenal cortex and medulla,** iodine in, A., 772.
- Adrenal extracts,** ovarian stimulation by, A., 258.
- Adrenalectomy,** metabolism of excised tissues in, A., 777. effect of adrenaline and insulin in, A., 538. effect of glucose on respiratory exchange in, A., 1529. with glucose administration, sodium chloride and protein changes in, A., 1400. blood-pressure, blood-urea-nitrogen, and fluid balance in, A., 127. effect of histamine on blood-sugar in, A., 116. effect of piqure diabétique on blood-sugar and blood-pressure in, A., 529. effect of, on fat absorption, A., 524, 1031. swelling of muscle in, A., 410. water retention and salt loss in, A., 107. in cats, blood chemistry of, A., 237. in young rats, mortality in, A., 1421.
- Adrenaline,** absorption spectrum of, A., 563. effect of pH on, A., 896. effect of ultra-violet light on, A., 1173. calorogenic action of, A., 1405. adsorption of, by red blood-corpuscles, A., 790. coloration of solutions of, by light, A., 458. preservation of solutions of, with chlorotone, B., 123. neutral and stable solution of, B., 828. inactivation of, by aldehydes, A., 666. oxidation of, A., 127. derivatives, catatonia from, A., 119. synthesis of, *in vitro*, A., 1014. production of, in shock, A., 386. spectrography of action of tyrosinase on, A., 897. effect of injection of, on its secretion, A., 1172. effect of denervation of adrenals on secretion of, A., 1534. effect of cortin on secretion of, A., 1543. effects of magnesium and potassium ions on secretion of, A., 258. sensitisation of, by cocaine, A., 528. effect of glycerophosphate and lecithin-fatty acids on sensitivity to, A., 1532. inactivation of, by organ extracts, A., 1543. action of, and of *p*-*l*-sympatol, A., 539. on adrenalectomised rabbits, A., 538. on blood-calcium, A., 258. on blood-pressure and pulse rate, A., 1422. on blood-pressure and blood-vessels, A., 1031. on blood-sugar, A., 410, 641, 1031, 1262. and its hydrochloride, on blood-sugar in hepatectomised and phloridzinised animals, A., 665. on blood-sugar and -lactic acid, A., 1173. on carbohydrate equilibrium at high altitudes, A., 241. on lactic acid, protein, and sugar in lymph and blood, A., 1261. on muscle metabolism, A., 1031.

- Adrenaline**, action of, on plasma-cholesterol, A., 411.
on plasma-fat acids, A., 1402.
on purine metabolism of dogs, A., 790.
on serum-potassium, A., 539.
on sugar exchange between blood and muscle, A., 127.
effect of adrenalone and sympathol on, A., 1173.
influence of amino-acids on, A., 1172.
effect of hydrogen and hydroxyl ions on, on uterine tonus, A., 1276.
influence of oxidation-reduction on, A., 900, 1422.
relation of pituitary to, A., 901.
effect of injection of, in moderate work, A., 1172.
effect of tricesol and chlorctone on pressor action of, B., 478.
protective action of, A., 900.
content of adrenals of grown rats, A., 1173.
relation of pituitary to content of, in adrenals, A., 1397.
in blood, and its relation to blood-sugar, A., 900.
effect of sodium bicarbonate on glycaemia from, A., 640.
inhibition by metals of glycogenolysis in liver from, A., 410.
effect of thyroxine and thyroidectomy on response of heart to, A., 900.
in relation to vagal tonus, A., 900.
oxidised, reduction of, by ascorbic acid, A., 1176.
detection of, in tissues, A., 1543.
in urine, A., 1173.
determination of, in adrenals in presence of ascorbic acid, A., 1283.
in blood, A., 642.
- Adrenalinuria**, A., 539.
- Adrenalone**, effect of, on action of adrenaline, A., 1173.
- Adsorbents**, B., 848.
reactivation of, (P.), B., 661.
solvent recovery with, B., 1036.
effect of, on plant growth, B., 918.
for water vapour, A., 1068.
intestinal, manufacture of, (P.), B., 287*.
solid, wandering of adsorbed atoms on, A., 1448.
- Adsorption**, A., 818, 929.
theory of, A., 578.
measurement of, and density near critical point, A., 696.
Patrick's formula for, A., 28.
isotherms of, A., 441, 818.
sorbed phase in, A., 696.
electric double layer in, A., 578.
ion exchange in, A., 697.
relation of, to solubility and the solvent, A., 442.
velocity of. See under Velocity.
and catalysis, A., 160, 711, 940.
and dyeing processes, B., 586.
of electrolytes by charcoal, effect of temperature on, A., 818.
of gases, cathode-ray oscillography of, A., 1316.
and Nernst's heat law, A., 696.
of mixed gases, A., 1316.
of ions, A., 1200.
of organic acids and their structure, A., 442.
from solution, A., 28, 696.
on homogeneous surfaces, A., 293.
on surfaces of salts, A., 161.
on surfaces of vitreous silica, A., 818.
activated, A., 1316.
kinetics of, A., 160.
- Adsorption**, activated, steric factor in, A., 578.
chromatographic, and its applications, A., 876.
inner, in salt crystals, A., 819, 1316.
selective, A., 1070.
- Adsorption apparatus**, (P.), B., 290, 1077.
column, B., 529.
- Adsorption layers**, investigation of, with photo-electric counter, A., 697.
- Adsorptivity**, relation of, to other properties, A., 1200.
- Aegle marmelos*, seed oil of, A., 551.
- Aération**, pyrex glass tubes for, A., 58.
- Aeronautics**, paints and varnishes for use in, B., 238.
- Aeroplanes**, paints for duralumin in, B., 194.
tautening of fabrics for, by cellulose acetate and nitrate dopes, B., 775.
alcohol-gasoline fuels for, B., 293.
- Aérosols**, A., 820.
filters for, (P.), B., 930, 1027.
aggregation of, by sound waves, A., 699.
determination in, of sulphuric acid, A., 53.
- Ætiocholane**, A., 414.
- Ætioallocholanolic acid**, A., 342, 396.
- Ætioallocholanolic acid**, 3-hydroxy-, acetyl derivative, and its methyl ester, A., 1371.
- Ætioallocholanone**, 3-hydroxy-, benzoate, and its semicarbazone, A., 346.
- Ætioullocholan-17-one**, and its semicarbazone, A., 346.
formation of, from cinchol, A., 1242.
- Ætioallocholan-17-one**, 3-bromo-, and its semicarbazone, A., 1125.
- 4^Δ-Ætiocholene-3:17-dione**, A., 1242.
- 4^Δ-Ætiocholene-3:17-dione**, A., 1125.
- Ætioallocholen-17-one**, 3-hydroxy-, A., 1242.
- 4^Δ-Ætiocholen-17-one**, 3-hydroxy-, and its acetyl derivative, A., 1125.
- alloÆtiocholy methyl ketone**, 3-hydroxy-, and its derivatives, A., 216.
- Ætioporphyrin**, oxidation of, A., 1255.
nitrate, and *tetrachloro*-, dihydrochloride, and nitro-, A., 1255.
- Ætioporphyrin**, 1:5-dibromo-, A., 1135.
- Affinity**, A., 1335.
relation of, to velocity of reaction, A., 709.
- Agar-agar**, A., 1170.
production of, B., 1068.
physical properties of, and its influence on growth of micro-organisms, A., 409.
fractionation of, A., 932.
interaction of fractions of, A., 1320.
from Black Sea *Phyllophora*, B., 828.
- Agaric acid**, A., 65.
- Agaricus campestris*. See Mushrooms.
- Agates**, genesis of, A., 1347.
- Age**, old, basal metabolism in, A., 777.
- Agglutinins**, recovery of, in proportion to antibodies fixed on bacteria, A., 665.
- Aglucones**, cardiac, structure of, A., 218, 497.
- Agriculture**, statistical treatment of data on, B., 919.
- Agrostis tenuis*, utilisation of nutrients by, A., 420.
Rhode Island, effect of fertilisers on seed yields of, B., 325.
- Ailanthus glandulosa*, oil from, B., 333.
- Air**, separation of constituents of, (P.), B., 290.
purification of, (P.), B., 210.
apparatus for, A., 126.
in closed rooms, (P.), B., 480.
electrical purification of, (P.), B., 415.
- Air**, apparatus for removal of dust from, (P.), B., 931.
centrifugal separation of dusts, etc., from, (P.), B., 659.
direct photography of dust in, A., 320.
removal of oxygen from, by bubbling through water, B., 47, 752.
pollution of, by smoke, B., 976.
conditioning of, in lacquer finishing rooms, B., 1103.
in mines, B., 926.
apparatus for, (P.), B., 1122.
solutions for, B., 976.
corrosion of equipment for, B., 1070.
deodorants for, (P.), B., 704.
dry disinfection of, (P.), B., 176.
filters for, (P.), B., 611, 978, 1077.
apparatus for control of humidity and temperature of, (P.), B., 659.
rectification of, (P.), B., 1142.
effect of argon on, B., 1141.
electrical treatment of, for healing purposes, (P.), B., 682.
absorption and reflexion coefficients of ultrasonic waves in, A., 20.
transparency of, A., 1184.
dielectric constant of, at high pressures, A., 808.
specific heat of, A., 690.
liquefaction of, apparatus for, (P.), B., 948.
viscosity of, and electronic charge, A., 1455.
ozonisers for, (P.), B., 731.
effect of temperature on explosions of mixtures of hydrocarbons and, A., 307.
recovery of Δ^{β} -butene from, A., 1348.
effect of wind on carbon dioxide in, A., 724.
krypton in, A., 468.
production of krypton and xenon from, (P.), B., 227, 900.
origin of combined nitrogen in, A., 953.
effect of, on metals, A., 41.
addition of oxygen to, in closed rooms, B., 207.
alveolar, on Everest, composition of, A., 507.
colloidal, A., 699.
size of particles in, A., 295.
compressed, dehumidification of, (P.), B., 1122.
expired, acetaldehyde and trimethylamine in, A., 112.
determination in, of arsenic, A., 1022.
ionised, dielectric constant of, A., 1304.
biological effect of, A., 1276.
influence of, on normal subjects, A., 895.
mountain, radioactivity of, A., 468.
from the stratosphere, composition of, A., 840, 953.
of uppermost strata of the earth, determination of combustible gases in, A., 1341.
detection in, of combustible gases, B., 926.
determination in, of ammonia, A., 184.
of arsenic, A., 59.
of organic arsenic compounds, A., 101.
of benzene, B., 576, 707.
of carbon monoxide, B., 526, 880.
of carbon dioxide, B., 288, 335, 671, 976.
apparatus for, A., 466.
of carbon disulphide vapour, B., 47.
of dust particles, A., 467.
of ethyl alcohol, A., 116.
of alcohol and ether vapours, B., 47.
of krypton and xenon, A., 463.

Air, determination in, of methyl alcohol, B., 1120.
 of sulphur dioxide, B., 336.
 See also Atmosphere.

Air-baths, A., 465.

Aircraft, effect of heat on aluminium alloys for, B., 997.
 fabrics for. See under Fabrics.
 alloy steels for, B., 272, 728.
 magnesium alloys for, B., 729.
 nickel alloys for, B., 272.
 fire-resistant, doped fabrics for, B., 626.

"Aktivin," action of photographic desensitisers on photochemical decomposition of, A., 1468.

Ajmaline derivatives, A., 636.

Ajmaline, dibromo-, and trinitro-, A., 636.
*iso*Ajmaline, and its salts, A., 636.
 Ajmaline series, A., 636.

Ajmalinine derivatives, A., 636.

apoAjmalinine, and its salts, A., 636.

Alanine, configuration of, A., 849.
 adrenaline sensitisation by, A., 1172.
 anaerobic production of pyruvic acid from, A., 1282.
 salts, A., 1486.

***l*-Alanine**, specific heat of solutions of, A., 304.
 benzenesulphonyl derivative, butyl ester, A., 101.

***d*-Alanine**, perfusion of intestines with, A., 112.

***l*-Alanylglycine**, benzenesulphonyl derivative, butyl ester, A., 101.

Albite, from Druzhnaya Gorka glass works, A., 60.

Albumin, unimolecular layers of, A., 29.
 coagulation of, A., 1320.
 heat-coagulation and colloid structure of, A., 1460.
 dilatometry of denaturation of, by heat, A., 822.
 heat-denaturation of, A., 822.
 insolubility of thin films of, A., 1071.
 hydrolysis of, A., 445.
 membranes. See under Membranes.
 solutions, distribution of electrolytes in, A., 1012.
 tannate, B., 782.
 glueing with mixtures of casein and, B., 592.
 assimilation of, by dogs with Eck fistula, A., 242.
 blood, autoclave hydrolysis of, A., 230, 999.
 egg-, for cake-baking test, B., 652.
 serum-, mol. wt. and osmotic pressure of, A., 643.
 of various animals, crystallisation of, A., 1142.
 human, mol. wt. of, A., 1142.
 crystallisation of, A., 508.
 analysis of, B., 746.
 determination of, in serum and urine, by the biuret method, A., 508.

Albuminous liquids, "non-solvent volume" of, A., 643.

Albuminuria, Bence-Jones, serum-proteins in, A., 886.

Alchemy, Chinese treatise on, A., 1219.
 Western, Chinese influence on, A., 840.

Alcohol. See Ethyl alcohol.

Alcohols, synthesis of, from gases, B., 258.
 manufacture of, (P.), B., 182, 618, 664, 938, 1085.
 from alkyl sulphate esters, (P.), B., 619.
 from fatty acids and their esters, (P.), B., 1003.
 from olefines, (P.), B., 182, 395.

Alcohols, manufacture of, from petroleum, B., 536.
 from wood waste, B., 249.
 purification of, A., 80; B., 745; (P.), B., 1129.
 dehydration of, (P.), B., 1113.
 denaturants for, (P.), B., 13.
 absorption spectra of, A., 680.
 far-ultra-violet absorption spectra of, A., 805.
 surface potentials of, A., 161.
 anodic behaviour of, in alkaline solutions, A., 937.
 dielectric properties of, in various solvents, A., 817.
 heat of reaction of, with keten, A., 36.
 physico-chemical properties of solutions of, in liquid hydrogen fluoride, A., 582.
 colours produced in mixtures of cupric chloride and halogen hydrides by, A., 167.
 dispersions of, and of their mixtures with benzene, A., 684.
 flocculation of protein solutions by, A., 164.
 comparative activities of carboxylic acids and, A., 38.
 catalytic dehydrogenation of, (P.), B., 182.
 hydrogenation of, by fermenting yeast, A., 123.
 oxidation of, to aldehydes, (P.), B., 620.
 cyclic oxidation of, to aliphatic acids, (P.), B., 138.
 condensation of, with aromatic hydrocarbons, A., 967.
 reactions of, with aldehydes in indifferent solvents, A., 694.
 influence of structure on reaction of, with hydrobromic acid, A., 453.
 saturation of affinity of oxygen in molecular compounds of, A., 429.
 compounds of, with magnesium chloride, A., 179.
 condensation products of phenols and, (P.), B., 443.
 ignition temperature of fuels containing, B., 791.
 permeability of protoplasm to, A., 265.
 acetylenic and di-ethylenic, preparation of, A., 470.
 alicyclic, configuration of, A., 340, 745.
 and their acetates, viscosities of, A., 925.
 aliphatic, Raman and infra-red absorption spectra of, A., 1190.
 polarisation and association of, A., 24.
 orientation polarisation curves of, A., 694.
 heat of mixing, heat of vaporisation, and association of, A., 439.
 solid, fractional distillation of, under reduced pressure, B., 1054.
 adsorption of, by ferric oxide gel, A., 28.
 free energy of hydration of, A., 441.
 manufacture of sulphonated halogen derivatives of, (P.), B., 13.
 toxicity of, to plants, B., 326.
 higher, determination in, of free hydroxyl groups, B., 1054.
polyhydric, hydrogenation of, (P.), B., 395.
 sulphonated, analysis of, B., 839.
 tertiary, manufacture of, (P.), B., 262.
 condensation of, with benzene and toluene, A., 967.
 aromatic, preparation of, A., 972.
 synthesis of hydrocarbons by cyclodehydration of, A., 481.

Alcohols, fatty, sulphonated, properties of, B., 795.
 higher, manufacture of, (P.), B., 938.
 from petroleum products, B., 392.
 decolorisation of, (P.), B., 938.
 conversion of fatty acids and their esters into, B., 1149.
 saturated, production of, from germinal-gland hormones, (P.), B., 1068.
 determination of, with Zeiss photometer, B., 379.
monohydric, electric moments of, A., 684.
polyhydric, production of inorganic colloidal solutions in, (P.), B., 621.
 esterification of, A., 1223.
 production of esters from, (P.), B., 92.
 production of nitric esters of, (P.), B., 893.
 mixed, heat treatment of, (P.), B., 90.
 separation of, (P.), B., 761.
 lower, adsorption of, by charcoal, A., 29.
 phenylated, cyclisation of, A., 481.
 primary, diamagnetism of, A., 923.
 and their acetates, dimorphism of, A., 20.
 catalytic dehydrogenation of, (P.), B., 840.
 higher, m.p. and crystal structure of, A., 152.
 action of calcium hypochlorite on, A., 958.
 odd-membered, α - β change of, A., 921.
 primary and secondary, determination of, in essential oils, B., 1118.
 secondary, production of, from olefines, (P.), B., 618.
 purification of, (P.), B., 13.
 solvents from, B., 714.
 production of esters of, (P.), B., 13.
 secondary and tertiary, removal of water from, A., 608.
 sulphated, use of, in insecticides, B., 968.
 analysis of, B., 839.
 tertiary, manufacture of, (P.), B., 347.
 Wagner transformation with, A., 865.
 acid hydrolysis of esters of, A., 473.
 unsaturated, production of, (P.), B., 138.
 dehydrogenation of, (P.), B., 1130.
 nitrophenylcarbimides as reagents for, A., 958.
 identification of, with 2:4:6-trinitrobenzoyl chloride, A., 1259.
 detection of, by their potassium xanthates, B., 486.
 determination of water in mixtures of ketones and, B., 839.

Alcoholæmia in men, influence of insulin on, A., 1285.

Alcoholates. See Alkoxides.

Alcoholic liquors, clarification and preservation of, (P.), B., 876.
 artificial ageing of, (P.), B., 696.
 nitrocellulose lacquers resistant to, B., 465.
 raw, ageing and maturing of, (P.), B., 377.
 determination in, of esters, B., 474.

Alcoholic products, determination in, of methyl alcohol, B., 1017.

Alcoholism, A., 656, 1154.

Aldechloroimines, removal of hydrogen chloride from, by sodium hydroxide, A., 939.
 thermal decomposition of, A., 620.

Aldehydes, electronic structure of, A., 1306.
 preparation of, from organo-magnesium compounds and *N*-disubstituted formamides, A., 736.
 production of, (P.), B., 297.
 from alcohols, (P.), B., 620.

Aldehydes, ebullioscopy of, in hydrogen fluoride, A., 820.
colours produced in mixtures of cupric chloride and halogen hydrides by, A., 167.
alkylation by means of, A., 1508.
hydrogenation of, by fermenting yeast, A., 123.
oxidation of, A., 1084.
reduction of mixtures of, with nitrites, A., 328.
condensation of, A., 846.
with malonic acid in presence of organic bases, A., 353, 626.
aldol condensation of, with β -keto-acids, A., 981.
condensation products of, with polyvinyl alcohols, (P.), B., 467.
saturation of affinity of oxygen in molecular compounds of, A., 429.
molecular compounds of, with magnesium alcoholate iodides, A., 978.
reaction of, with alcohols in indifferent solvents, A., 694.
synthesis of benzthiazoles from *o*-thiolamines and, A., 1386.
phenylhydrazonesulphonic acids of, A., 620.
artificial resins from cyclic ketones and, (P.), B., 1154.
action of, on antibodies, A., 644.
alicyclic, oxidation of, to acids, (P.), B., 348.
aliphatic, photo-dissociation of, A., 48, 1211.
aromatic, equilibria of, with aminoacids, A., 491.
elimination of aldehydic group from, A., 1238.
reduction of Fehling's solution by, A., 1497.
catalysis of condensation of, with hydantoins, A., 628.
condensation of, with phosphoric acid, A., 208.
tautomerism of condensation products of, with barbituric acid, A., 759.
reaction of, with benzene and toluene, in presence of aluminium chloride, A., 344.
with sodium enolate of homophthalic anhydride, A., 344.
preparation of phenylacetonitriles from, A., 617.
spermicidal efficiencies of, A., 526.
substituted, pyridine synthesis from, A., 989.
 α -ethylenic, hydrogenation of binary mixtures of, A., 608.
saturated, absorption spectra of, A., 914.
unsaturated, and Tischechenko reaction, A., 846.
arylhidrazones, reaction of, with halogens, A., 344.
 $\alpha\beta$ -unsaturated, reduction of mixtures of, A., 963.
action of organomagnesium halides on, A., 963.
Schiff colour reaction of, A., 962.
thiohydrazides as reagents for, A., 1512.
identification of, with *p*-nitrobenzhydrazide, A., 1259.
with *o*-tolylsemicarbazide, A., 1259.
determination of, by hydrogen sulphite method, A., 102.
by means of hydroxylamine and pyridine, A., 370.
in wines, B., 330.
2-Aldehyde-3-acetyl-4-methylpyrrole-5-carboxylic acid, and its derivatives, A., 632.

Aldehyde-amines, action of maleic anhydride on, A., 491.
6-Aldehydeanthraquinone, 1-hydroxy-, A., 495.
d-trans-7-Aldehydeapocamphor, A., 865.
2-Aldehyde-4-carbethoxy-3-ethylpyrrole-5-carboxylic acid, and its methyl ester and derivatives, A., 1134.
o-Aldehyde-carboxylic acids, A., 490.
8-Aldehyde-7-coumaroxyacetic acid, and its ethyl ester, A., 868.
 γ -Aldehyde- $\beta\gamma$ -dimethyl- Δ^6 -heptadiene, and its semicarbazone, A., 605.
2-Aldehyde-3-ethylpyrrole-5-carboxylic acid, 4-bromo-, ethyl ester and azino of, A., 1134.
2-Aldehyde-3-ethylpyrrole-4-5-dicarboxylic acid, A., 1134.
6-Aldehyde-2:4-*d*-hydroxybenzoic acid *di*-nitrophenylhydrazone, A., 1483.
3-Aldehyde-4-keto-6:7-dimethoxy-1-(3':4'-dimethoxyphenyl)-1:2:3:4-tetrahydronaphthalene-2-carboxylic acid, ethyl ester and derivatives, A., 861.
Aldehyde-*d*- α -mannoheptose hexaacetate, A., 69.
2-Aldehydomethoxyphenoxyacetic acids, ethyl esters, and their semicarbazones and derivatives, A., 1130.
2-Aldehyde-3-methyl-4-ethylpyrrole-5-carboxylic acid, and its ethyl ester, and its derivatives, A., 632.
5-Aldehyde-3-methylpyrrole, A., 632.
p-Aldehydophenyl cholesterylcarbonate, A., 745.
8-(5'-Aldehydophenyl)-1:3-benzdioxin, 6-nitro-8-(3'-nitro-2'-hydroxy)-, A., 627.
o-Aldehydophenyl-*N*-*p*-chlorophenylurethane, A., 998.
3-Aldehyde-5-propionyl-2-methyl-4-ethylpyrrole, A., 631.
2-Aldehyde-1-propylpyrogallol 5-methyl ether, and its anil, A., 978.
2-Aldehyde-*p*-tolyl-*N*-*p*-chlorophenylurethane, A., 998.
 α -Aldehyde-8-(2:2:6-trimethyl- Δ^6 -cyclohexenyl)- β -methyl- Δ^4 -butadiene phenylsemicarbazone, A., 978.
 α -Aldehydotropic acid, ethyl ester, A., 1364.
Alder, use of waste from, for production of brown pulp, B., 446.
Aldols, constitution of, A., 962.
Aldol condensations, A., 1353.
Aldonic acids, configuration of, A., 197.
calcium and lead salts, properties of, A., 732.
preparation of amides from, A., 72.
Aldoses, polymerisation of, (P.), B., 120, 970.
 α -Aldoses, preparation of acetates of, from acetylated glycosides, A., 68.
Aldoximes, surface potentials of, A., 161.
Aleurites trisperma, oil from, B., 813.
Aleuritic acid, constitution of, A., 1352.
Alexin, constitution of, A., 882.
behaviour of, in an electric field, A., 1002.
inactivation of third component of, by yeast, A., 231.
behaviour of fractions of, in the Wassermann reaction, A., 1002.
Algæ, effect of growth of, on p_H of water, B., 128.
fluorescence spectra of, A., 1043.
chemistry of, A., 1040.
cytochrome in, A., 1040.
introduction of deuterium into, A., 132.
mucilage of, used for cementing Japanese walls, B., 852.
peroxidase in, A., 532.
sterols in, A., 673.

Algæ, control of, B., 832.
autolysis of, A., 533.
brown, vitamins in, A., 414.
calcareous, metabolism of, A., 1178.
green, assimilation and respiration of, A., 549.
marine, B., 986.
extraction of, A., 550.
composition of, A., 1434.
cellulose of, A., 550.
iodine in, A., 553.
evolution of methyl sulphide by, A., 1042.
phosphorus content of, A., 1179.
production of artificial wool from, (P.), B., 143.
cell physiology of, A., 671.
Chinese, iodine content of, A., 1436.
in Manitoba soils, A., 661.
Alginase, A., 254.
Alginetin derivatives, A., 753.
Alginic acid, preparation and properties of, A., 550.
decomposition of, A., 753.
by bacteria, A., 254.
formation of reducing substance by hydrolysis of, A., 327.
Alicyclic compounds, A., 1367.
Alimentary liquids, coloured, determination in, of free acid, B., 875.
Aliphatic compounds, dimorphism of, A., 20.
influence of polar group on free energy of hydration of, A., 1067.
substitution in, and Walden inversion, A., 1465.
higher, manufacture of, (P.), B., 1131.
Alite, B., 675.
Alizarin, colorimetric determination of aluminium with, A., 464.
Alizarin-red, staining of deposited calcium by, A., 647.
Alkadienes, preparation of, A., 1348.
Alkali aluminates, composition and constitution of, A., 50.
amides, substituted, manufacture of solutions and suspensions of, (P.), B., 796.
borates, A., 313, 1333.
glass-like, electrical conductivity of, A., 1078.
perborates, production of, (P.), B., 1142.
bromides, activity coefficients of, in aqueous solution, A., 1077.
carbonates, determination of, A., 836.
carbonates and hydroxides, viscosity and density of solutions of, and their mixtures, A., 694.
chlorides, refractive index of solutions of, A., 916.
solubility of, in liquid ammonia, A., 1314.
hydrolysis of, A., 1087.
reaction of, with calcium nitrate in liquid ammonia, A., 178.
double chlorides, crystal structure of, A., 812.
chlorides and nitrates, solubility of, in ammonia-water mixtures, A., 26.
dichromates, absorption spectra of, A., 805.
fluorophosphates, electrolysis of, A., 589.
halides, ultra-violet absorption spectra of, A., 280.
ultra-violet absorption and colour centre formation by, A., 1443.
light absorption by silver halides and, A., 808.
red layer formed at border of coloured zone in, A., 280.
apparatus for electrolysis of, (P.), B., 910.

Alkali halides, heats of formation and electrolytic decomposition potentials of, A., 303.
 thermal expansion of, at high temperatures, A., 21.
 compressibility coefficients of solutions of, A., 31.
 crystals, photochemistry of, A., 9, 808.
 velocity of migration of electrons in, A., 557.
 colour centres in, A., 915.
 photo-effect in colloiddally coloured, A., 282.
 absorption due to added substances in, A., 9.
 double decompositions of, A., 832.
 manufacture of compounds of, with amines, (P.), B., 1165.
 additive compounds of organic bases and, A., 48.
 lead halides, complex, formation of, A., 317.
 hydrides, manufacture of, (P.), B., 99.
 hydrolysis of, A., 713.
 hydroxides, conductivity of, in dilute solutions, A., 936.
 manufacture of solutions of, (P.), B., 305.
 photochemical reaction of, with mercuric iodide, A., 458.
 hypochlorites, stability of solutions of, B., 493.
 industry, B., 225.
 iodides, activity coefficients of, in aqueous solutions, A., 1077.
 action of halogen compounds on solutions of, A., 179.
 ions, ionisation of inert gases by, A., 556.
 metals, A., 283.
 matrix elements for, A., 1187.
 lattice constants for, A., 1187.
 effective atomic cross-sections of, in gases, A., 1295.
 recovery of, from their solutions and amalgams, (P.), B., 909.
 optical constant of, A., 684.
 spectra of, A., 1, 799.
 effect of mercury vapour on, A., 1.
 absorption spectra of, A., 136.
 continuous absorption spectra of, A., 799.
 spectral selective photo-electric effect with, A., 273.
 photo-effect of films of, on platinum, A., 909.
 effect of pressure on electrical conductivity of, A., 566.
 ionisation potentials in vapours of, A., 4.
 electrolytic introduction of, through glass, A., 705.
 thermo-electric effect in, A., 923, 1312.
 viscosity of, *in vacuo*, A., 290.
 adsorption of, by metal surfaces, A., 27, 929.
 reactions of halogen hydrides with, A., 1327.
 electrolytic cells for production of alloys of, with mercury, (P.), B., 237.
 compounds of, with 8-hydroxyquinoline, A., 989.
 double sulphates of rare-earths and, A., 180.
 detection of, spectrographically, A., 185.
 detection and determination of, in petroleum, B., 613.
 determination of, spectrographically, A., 185, 719.

Alkali metals, determination of, in minerals, A., 54.
 nitrates, production of, (P.), B., 146, 991.
 from the chlorides, (P.), B., 146, 226.
 activity coefficients of, in aqueous solutions, A., 1077.
 prevention of explosion of melts of, for refining of metals, B., 809.
 organic compounds, theory of, A., 283.
 oxides, equilibrium of, with alumina, carbon dioxide, lime, and silica, A., 1323.
 plumbites, action of alkyl iodides on, A., 611.
 salts, precipitation of soap solutions by, A., 120.
 silicates, hydrated, conditioning of, (P.), B., 1092.
 aluminium silicates, A., 168, 1462, 1470.
 sulphates, electrolysis of aqueous solutions of, B., 1000.
 equilibria of, with cerous sulphate and water, A., 36.
 persulphates, properties of, A., 1334.
 sulphides, manufacture of, (P.), B., 146.
 tellurates, colour and molecular state of, in aqueous solutions, A., 444.
 Alkalies, influence of sucrose on p_{H} of solutions of, A., 170.
 action of, on refractory materials, B., 1094.
 potentiometric titration of, A., 182.
 determination of, A., 596.
 in felspars, A., 1338.
 in silicates, B., 405.
 See also Alkali hydroxides.
 Alkali-lignin, A., 1373.
 Alkali reserve, effect of ingestion of guanidine and of water on, A., 651.
 effect of insulin on, A., 1269.
 determination of, in blood, A., 880.
 Alkalimetry, micro-, A., 949.
 Alkaline-earth arsenates, reduction of, by carbon, A., 313.
 perchlorates, anhydrous, preparation of, A., 832.
 ammine perchlorates, A., 832.
 chlorides, equilibrium of, with the oxides, and their decomposition by steam, A., 1322.
 compounds, dissolving of minerals of, (P.), B., 494.
 halides, heats of formation and electrolytic decomposition potentials of, A., 303.
 manufacture of compounds of, with amines, (P.), B., 1165.
 hydrides, crystal structure of, A., 285.
 hydroxides, conductivity of, in aqueous solution, A., 1078.
 action of, on mercuric iodide, A., 459.
 metals, recovery of, from drosses, etc., (P.), B., 236.
 electrodeposition of, (P.), B., 236.
 detection of, on hot cathodes of oxide values, A., 836.
 determination of, spectrographically, A., 185.
 ammoniate nitrates, A., 833.
 oxides, conductivities and decomposition potentials of, in fused fluorides, A., 584.
 potential energy curves and structure of, A., 1448.
 salts, precipitation of soap solutions by, A., 120.
 compounds of, with disodium periodate, A., 51.

Alkaloids, surface activity of, A., 396.
 surface potentials of solutions of, A., 698.
 effect of, on fluorescence of uranine solutions, A., 1446.
 amination of, by potassamide and sodamide, A., 223, 635, 764, 993, 1136.
 salts, determination of, A., 769, 1141.
 effect of, on polarity of infusoria, A., 245.
 as reagents, A., 950.
 of fumaraceous plants, pharmacology of, A., 1410.
 medicinal, synthesis of, B., 573.
 reagents for, A., 102.
 determination of, with bromine, B., 654.
 in drugs with air-lift extractor, B., 653.
 in solutions for injection, B., 1117.
 See also Aconite, Cactus, etc.
 Alkane-seleninic acids, A., 959.
 Alkanna, red dye from root of, A., 1244.
 constitution of, A., 1254.
 and its nickel salt, A., 217.
 methyl ether, addition of diazomethane and $\beta\gamma$ -dimethyl- $\Delta^{2,3}$ -butadiene to, A., 1253.
 "Alkeines," from α -methoxypropionic acids, synthesis of, A., 730.
 Alkekengi, vitamin-C in, A., 1546.
 Alkenes, preparation of, A., 1348.
 Alkines, preparation of, A., 1348.
 Alkoxides, aluminium, preparation of, A., 325.
 magnesium, ethereal solutions of iodides of, A., 978.
 mixed, and their molecular compounds, A., 978.
 Alkoxyacetic acids, manufacture of, (P.), B., 1130.
 4-Alkoxyanthracenes, 1-hydroxy-, manufacture of, (P.), B., 762.
 β -Alkoxyethyl *p*-aminobenzoates, A., 1494.
 5-Alkoxyethylfurfuraldehydes, preparation of, from carbohydrates, A., 497.
 α -Alkoxyphenylpropyl alcohols, β -amino-, and β -hydroxylamino-, sensitivity of, to alkali, A., 972.
 β -nitro-, and their methyl ethers, synthesis of, A., 971.
 Alkyl borates, electric moments of, A., 1192.
 bromides, preparation of, using phosphorus tribromide, A., 1348.
 manufacture of, from olefines, (P.), B., 1129.
 catalytic decomposition of, A., 1103.
 higher, preparation of, A., 193.
 chlorides, manufacture of, from olefines, (P.), B., 1129.
 heats of adsorption of, on active charcoal, A., 696.
 catalytic decomposition of, A., 604.
 hydrolysis of, (P.), B., 138.
 trichloromethyl carbonates, reactions of, A., 471.
 chlorosulphites, electric moments of, A., 430.
 halides, manufacture of, (P.), B., 1085.
 from olefine mixtures, (P.), B., 1084.
 electric moments of, A., 1056.
 secondary and tertiary, hydrolysis of, A., 710.
 identification of, as *N*-alkyl-*p*-bromobenzenesulphon-*p*-anisidides, A., 193.
 iodides, action of, on alkali plumbites, A., 611.
 with sodium *m*-4-xylyloxide, A., 453.
 nitrites, gaseous, decomposition of, A., 938.
 peroxides, A., 1222.
 radicals, formation of, A., 1112.
 ultra-violet absorption spectra of substances containing, A., 680.

Alkyl radicals, mobilities of, in their chloroformates, A., 1105.
in their chlorosulphites, A., 606.
replacement series of, A., 472.
free, reactions involving, A., 48.
sulphates, reaction of, with Grignard reagents, A., 326.
polysulphides, constitution of, A., 1447.
sulphites, neutral, decomposition of, by heat, A., 63.
Alkylamines, higher, manufacture of water-soluble mineral acid derivatives of, (P.), B., 1131.
4(5)- β -Alkylaminoethylglyoxalines, A., 759.
p-sec.-Alkylaminophenols, production of, (P.), B., 894.
Alkylaminothiomethanesulphonic acids, potassium salts, formation of, from thio-carbimides and potassium hydrogen sulphite, A., 332.
Alkylanilines, rearrangement of, A., 76.
Alkylation by means of aldehydes, A., 1508.
Alkylbenzenes, manufacture of, (P.), B., 140.
nitration of, A., 204.
Alkylbenzoquinones, condensation of, with butadiene, A., 863.
Alkylcarbinols, ditertiary, dehydration of, A., 62.
*cyclo*Alkylcarbinols, effect of strain in, on their reactivity with benzene, in presence of aluminium chloride, A., 80.
6-Alkyl-*m*-cresols, oral toxicity of, A., 656.
Alkylene chlorohydrins, manufacture of aliphatic esters and, (P.), B., 1130.
derivatives, manufacture of, (P.), B., 539.
oxides, addition of hydrogen sulphide and mercaptans to, A., 729.
Alkylenediamines, unsymmetrically-substituted, manufacture of, (P.), B., 348.
Alkylethylenediamine derivatives, A., 337.
 α -Alkylfurans, preparation of, A., 866.
Alkylhydroxybenzenes, anthelmintic action of, A., 529.
Alkylidenecyclohexanes, Raman effect of C:C linking in, A., 1034.
Alkylidenecyclohexenes, Raman effect of the C:C linking in, A., 1054.
Alkylmalonic acids, esters of, reactivity of, A., 961.
1-Alkyl- β -naphthols, preparation of, A., 744, 970.
Alkylphenanthrenes, synthesis of, A., 205.
Alkylphenols, anthelmintic action of, A., 529, 1159.
o-*n*-Alkylphenols, toxicity of, to white rats, A., 1020.
tert-Alkylphenols, manufacture of, (P.), B., 716.
N-Alkylphenoxazines, A., 1491.
Alkylpyridines, amino-, A., 499.
Alkylquinolines, preparation of, A., 499.
Alkylquinolines, amino-, A., 499.
Alkylresorcinolcarboxylic acids, mercuriation and germicidal properties of, A., 1364.
Alkylsulphonic acids, manufacture of, (P.), B., 938.
sodium salts, preparation of, A., 606.
manufacture of bleaching agents from, (P.), B., 620.
Alkylstannonic acids, and their salts and hydrates, A., 967.
2-Alkyltetrahydropyrans, preparation of, A., 626.
Alkyltriazines, aminothiol-, conversion of, into aminohydroxy-derivatives, A., 1254.
Allanite, of Amherst County, Virginia, age of, A., 1344.

Allantoin, thermal data for, A., 1324.
biochemistry of, A., 389.
effect of insulin on excretion of, in dogs, A., 538.
effect of high purine diet on, in man, A., 524.
determination of, microchemically, A., 1140.
Allantoins, degradations of, A., 223.
Alleghanyite, formula and crystal structure of, A., 323.
Allenenes, spatial configuration of, A., 1115.
asymmetry of, A., 968.
isomerisation of, by silicates, A., 957.
Allenic compounds, resolution of, A., 1363.
Allergens, preservation of solutions of, (P.), B., 924.
in pollen, A., 549.
Allergy, complement content of blood in, A., 1396.
ingestion of excess sodium chloride in, A., 1400.
urinary protose in, A., 514.
Allium, carbohydrates in bulbs of, A., 673, 1435.
assay of preparations of, A., 1019.
Allium cepa, effect of thyroxine on root growth in, A., 668.
Allophane, A., 322.
Allotropy in dipolar compounds, A., 572.
Alloxan, thermal data for, A., 1324.
4-Alloxanylamino-5-*l*-arabitylamino-*o*-xylene, A., 761.
Alloxanyl-4-amino-5-methylamino-*o*-xylene, A., 94.
Alloys, A., 692.
and metals, A., 1455.
ordered atomic distribution in, A., 1199.
superlattices in, A., 1193, 1456.
state of matter in, in relation to volume, A., 1199.
formation of, from galvanic elements, A., 1080.
production of, in cupolas, (P.), B., 772.
from electroplated powder, (P.), B., 1051.
purification of, (P.), B., 956.
refining of, by vacuum, (P.), B., 556.
grain size and dendrite fineness of, B., 192.
grain refinement of, by peritectic reactions, B., 191.
influence of grain size on high-temperature characteristics of, B., 501.
ageing of, B., 153.
age-hardening of, B., 191.
precipitation-hardening in, B., 312.
casting of, (P.), B., 772.
X-ray study of castings of, B., 153.
X-ray absorption edges of, A., 812, 1194.
Hall effect in, A., 693.
superconductivity of, A., 816.
effect of electric currents on, A., 291.
electrochemical anodic behaviour of, A., 1467.
electroplating of, with aluminium, B., 65.
magnetic susceptibility and atomic state of, A., 576.
thermo-electric forces of, A., 1066.
specific heat of, A., 690.
thermal changes during transformations in, A., 576.
second order transformations in, A., 439.
Hume-Rothery rule for, A., 688.
solid solution in, A., 1067.
chemical stability of, in solution, A., 1066.
intercrystalline corrosion in, B., 311.
use of, as constructional materials in chemical works, B., 554.

Alloys, for electrical resistances, B., 1049.
as substitutes for gold, B., 552.
for permanent magnets, (P.), B., 999.
of rarer metals, B., 105.
for thermionic valves and cathodes, (P.), B., 66.
for getters for thermionic devices, (P.), B., 810.
anti-friction, casting of, on iron alloys, (P.), B., 910.
bearing-metal, B., 729.
treatment of, (P.), B., 314.
action between lubricants and, B., 954.
cadmium-base, B., 459.
Bohn copper-lead, B., 104.
lead, (P.), B., 956.
testing of, B., 501.
determination in, of tin with ceric sulphate, B., 64.
binary, X-ray structure of, A., 1065.
foundry properties of, B., 28.
application of Bloch theory to, A., 153.
electrical conductivity and equilibria in, A., 23.
binary and ternary, vapour pressure and activity of, with volatile components, A., 927.
of γ -brass structure, magnetic susceptibility of, A., 1314.
carbide, (P.), B., 908.
production of, (P.), B., 235, 505.
production of sintered bodies of, (P.), B., 556.
hard, manufacture of, (P.), B., 810.
corrosion-resistant, for cellulose and paper manufacture, B., 27.
"decaying," A., 1089.
dental. See Dental alloys.
eutectic, crystallisation of, A., 926.
transformations in, A., 291.
ferromagnetic, B., 551.
determination in, of sulphur, B., 854.
hard, manufacture of, (P.), B., 157, 362, 1148.
manufacture and moulding of, (P.), B., 505.
metallography of, B., 63.
materials for polishing and grinding of, (P.), B., 188.
substitution of nickel for cobalt in, B., 105.
plastic colloidal tungsten compounds for, (P.), B., 900.
cast, B., 105.
hard-metal, manufacture of, (P.), B., 557.
heat-resistant, B., 230.
Heusler. See Heusler alloys.
light, degassing of, (P.), B., 414.
metallography of, B., 154.
spot-welding of, B., 460.
homogeneity of, B., 232.
corrosion-protective films on, B., 502.
aldrey-type, alloying of, B., 553.
spectrometric analysis of, B., 65.
light-metal, modification of mechanical properties of, (P.), B., 909.
supersaturated, separation of components from, B., 678.
of low m.p., powdered, production of, B., 954.
magnetic, A., 159; (P.), B., 998, 999.
for cores of Pupin coils, (P.), B., 556.
molten, removal of gases from, (P.), B., 679.
internal friction of, A., 927.
surface tension of, A., 811.
noble-metal, electrodeposition of, B., 730.
non-ferrous, refining and casting of, (P.), B., 235.

Alloys, non-ferrous, casting, deoxidation, and degasification of, B., 1049.
corrosion-resisting, B., 955.
pulverulent, manufacture of, for dust cores, (P.), B., 505.
quaternary, equilibrium diagram for, A., 927.
radioactive. See Radioactive alloys.
solid, electrolysis of, A., 936.
superconducting, magnetic properties of, A., 689.
magnetic properties and critical currents of, A., 923.
penetration of magnetic fields into, A., 287, 440.
specific heat of, A., 1312.
ternary perfect, A., 1200.
type-metal. See under Type-metals.
quantitative spectroscopic analysis of, A., 315.
determination in, of aluminium, titanium, and zirconium, B., 807.
of antimony, B., 996.
 γ -Alloys, structure of, A., 812.
Allyl alcohol, equilibrium of, with salts and water, A., 935.
detection of, A., 370.
Allyl ethers, hydrogenation of, A., 1509.
groups, migration of, in ethyl acetate series, A., 1482.
sulphite, and its decomposition by heat, A., 63.
Allylacetic acid, effect of peroxides on orientation of addition of hydrogen bromide to, A., 195.
4-O-Allyl-3-allylresacetophenone, A., 863.
2-Allylamino-4-(3'-4'-dihydroxyphenyl)-thiazole, A., 1511.
5-Allyl-5- β -amylbarbituric acid, and its salts, manufacture of, (P.), B., 205.
3-Allyl- α -anisyl β -diethylaminoethyl ether, (P.), B., 1132.
5-Allyl-5-barbiturylacetanilide, A., 1507.
Allylbenzene, catalytic transformation of, A., 611.
Allylbindone, and trinitro-, A., 623.
N-Allyl-p-bromobenzenesulphon-p-aniside, A., 193.
 α -Allyl- γ -butyrolactone, A., 474.
5-Allyl-1:2:3:4:7:8:1':2':3':4'-decahydro-1:2-benzanthracene, A., 1117.
3-Allyl-3:4-dihydroquinazoline, derivatives of, A., 365.
Allylcyclohexane, catalytic transformation of, A., 611.
5-Allyl-5- β -methylallyl-2-thiobarbituric acid, A., 1507.
 α -Allyl- β -methyl- β -hydroxyadipic acid, ethyl ester, γ -lactone of, (P.), B., 1130.
Allylpyridinium bromide, perchlorate, and picrate, A., 1131.
Allylquinolinium bromide, A., 365.
Allylsquolinium bromide and perchlorate, A., 1131.
Allylresacetophenones, A., 862.
2-Allylresorcinol, A., 863, 1233.
4-Allylresorcinol, preparation of, A., 1233.
Allylthiocarbamide, photo-sensitised oxidation of, A., 311.
Allylthiocarbimide, action of, with piperidine, A., 934.
6- and 8-Allylthiol-2-phenylquinoline-4-carboxylic acids, A., 485.
Almandine from Botallack, Cornwall, A., 600.
Almonds, ground, adulteration of, B., 781.
Aloes, evaluation of, B., 478.
Aloin, testing of, B., 205.
Aloperine, and its salts, A., 635.

Althaea officinalis, formation of mucilage in roots of, A., 133.
Althaea rosea, action of hydrogen cyanide on oxidase of, A., 1535.
Altitudes, high, effect of, on blood-sugar, glycogen, etc., A., 529.
Altrose derivatives, conversion of, into glucose derivatives, A., 1225.
d-Altrose, A., 1355.
Alum crystals, growth and adsorption in, A., 697.
testing of, B., 205.
Alums, crystal structure of, A., 571, 811, 1308.
Alumina. See Aluminium oxide.
Aluminates. See under Aluminium.
Aluminium, atomic wave function of, A., 1187.
nuclear disruption of, A., 1442.
nuclear energy of, A., 1443.
and its alloys, microstructure of, B., 997.
production of, electrolytic apparatus for, (P.), B., 811, 957.
electrolytic cells for, B., 1147.
anodes for electrolytic cells for, (P.), B., 638.
reactions in lime-soda-bauxite mixtures for, B., 354.
recovery of, as sulphate, from foundry dross, (P.), B., 900.
refining of, by vacuum distillation, B., 729.
electrolytic refining of, B., 65; (P.), B., 107.
effect of impurities on properties and workability of, B., 501.
testing of purity of, B., 501.
annealing of, B., 312, 553.
die castings of, B., 361.
unsoundness in sand castings of, B., 553.
running quality of sand mould castings of, B., 191.
cementation of, with copper, B., 361.
colouring of, B., 501; (P.), B., 1000.
and its alloys, B., 1146.
melting of, (P.), B., 505.
electrical melting of, B., 232.
artificial cryolite for electric smelting of, B., 354.
solder for, (P.), B., 557.
soldering of, (P.), B., 157.
and its alloys, (P.), B., 506.
flux for, (P.), B., 362.
to brass, A., 1098.
and its alloys with magnesium, autogenous welding of, B., 808.
welded bus-bars of, B., 1049.
and its alloys, testing of, B., 771.
spectrum of, A., 676.
K α -spectrum of, A., 424.
vacuum spark spectrum of, A., 271.
X-ray absorption spectrum of, A., 801.
and its alloys, effect of surface treatment on reflecting power of, B., 501, 636.
transmutation of, by deuterons, A., 559.
transformation of, by neutrons, A., 911.
disintegration of, by protons, A., 7.
ejection of protons from, by action of α -rays, A., 911.
induced radioactivity of, A., 803.
electrical resistance of, at liquid helium temperatures, A., 814.
and its oxide, electron diffraction by, A., 434.
and its alloys, anodic treatment of, (P.), B., 957.
anodic oxidation of, and its alloys, B., 502.
with superimposed a.c. on d.c., A., 1210.
anodic films on, and prevention of corrosion, B., 154.

Aluminium, baths for electrolytic oxidation of, B., 154.
structure of electrolytic layer on, A., 592.
electric penetration of thin oxide layers on, in electrolytes, A., 38.
electronic charge of, A., 272.
electrometallurgy of, A., 45; B., 362.
electroplating with, of alloys, B., 65.
thermo-electric effect in, A., 1312.
liquid, solubility of hydrogen in, A., 1315.
vapour, spectrum of, A., 1183.
films, thin, velocities of photo-electrons in, A., 1293.
diffusion of hydrogen through, A., 692.
effect of β -naphthoquinoline on rate of solution of, in hydrochloric acid, A., 309.
solid solubility of, in magnesium, A., 576.
separation of aluminium-iron-silicon eutectic in, B., 636.
solubility of gases in, B., 27.
solid solubility of magnesium-zinc alloy in, A., 576.
decomposition of solid solutions of silicon in, A., 1328.
pure, recrystallisation of, A., 1194.
crystals, X-ray structure of, A., 812.
"recovery" of, and their recrystallisation, A., 923.
deformed, weakening of, by annealing, A., 1062.
single, formation of, A., 1089.
mixed, magnetic susceptibility of, A., 154.
gels, negatively-charged, (P.), B., 100.
and its alloys with magnesium, light from burning of, A., 459.
poisoning and activation of, A., 309.
corrosion of, by sodium hydroxide, A., 1084.
and its alloys, prevention of corrosion of, B., 460.
protection of, against corrosion, B., 361; (P.), B., 274, 680.
and its alloys, by oxide films, B., 233, 413.
and its alloys, test for corrosion-resistance of, B., 553.
and its alloys, surface treatment and protection of, B., 233.
electrolytic surface treatment of, for constructional use, B., 502.
and its alloys, coating of, (P.), B., 681.
and its alloys, deposition of metal coatings on, B., 232.
oxide coating of, (P.), B., 1000.
dyeing of oxide films on, (P.), B., 506.
and its alloys, surface coating of, B., 460.
electroplating of, with nickel, B., 105, 1147.
and its alloys, production of anticorrosive films on, (P.), B., 956.
production of insulating anodic layers on, B., 955.
production of mirror surfaces on, (P.), B., 957.
gilding of, B., 637.
paints for, B., 277.
and its alloys, painting of, B., 1151.
test for reactivity of, B., 28.
action of chloride fluxes on oxides in, B., 1049.
and its alloys, uses of, B., 273.
use of, in building, B., 1098.
in chemical plant, B., 105.
coating with, of iron, (P.), B., 157.
of iron articles, (P.), B., 998.
and its alloys, of iron and steel, (P.), B., 1147.

Aluminium, production of lithographic plates of, (P.), B., 236.
 photography on, B., 1023.
 and its alloys, photographic reproduction on, (P.), B., 1119.
 and its alloys, photographic production of written characters, etc., on, (P.), B., 46.
 rivets for, (P.), B., 315.
 rotors of, (P.), B., 315.
 occurrence of, in foods, B., 1116.
 cooking and storage of foods in vessels of, B., 1162.
 pathological effects of, in foods, A., 1533.
 toxicity of, A., 1160.
 to seedlings, A., 797.
 cast, recrystallisation of, B., 955.
 cold-worked, broadening of X-ray lines of, A., 16.
 scrap, remelting of, (P.), B., 274.
Aluminium alloys, A., 291; (P.), B., 236, 557, 680, 810, 1000, 1099, 1148.
 manufacture of, B., 154; (P.), B., 193.
 flux for, (P.), B., 315.
 heat treatment of, B., 553; (P.), B., 909.
 effect of thermic treatment on physical properties of, B., 729.
 metallography of, B., 154.
 determination of castability of, B., 232.
 effect of alloying elements on, B., 459.
 effect of cerium on, B., 771.
 reflexion of light by, A., 154.
 influence of heat treatment on resistance of, to corrosion by sea-water, B., 28.
 increasing corrosion-resistance of, (P.), B., 1000.
 oxide film on, B., 997.
 dyeing of oxide films on, (P.), B., 506.
 for aircraft, effect of heat on strength and dimensional stability of, B., 997.
 for bearings, (P.), B., 557.
 for casting, colorimetric reactions of, B., 905.
 for pistons, (P.), B., 274.
 anodised, uses of, B., 28.
 binary, equilibria in, A., 439.
 cast, heat treatment of, B., 313.
 free-cutting, (P.), B., 680.
 test for reactivity of, B., 28.
 analysis of, B., 65.
 determination of silicon in, B., 313.
Aluminium alloys, with barium, A., 1065.
 with beryllium, (P.), B., 66, 461.
 with copper, A., 158; (P.), B., 1000.
 intermediate phase in, B., 411.
 transformation of β -phase in, A., 291.
 hardening of, B., 191.
 variation of thermal and electrical resistance during precipitation-hardening of, B., 729.
 plating of, (P.), B., 909.
 wires of, B., 856.
 with copper or silver, dilatometric study of, B., 551.
 with copper and nickel, wrought, B., 594.
 with gallium, A., 291.
 with gold, fluor spar structure of, A., 917.
 with iron, A., 693.
 X-ray analysis of, A., 158.
 crystal structure of, A., 285, 433.
 heat-treated, electrical resistance of, B., 501.
 with iron and mercury, A., 23.
 with iron and nickel, for permanent magnets, (P.), B., 810.
 magnetic, (P.), B., 504, 857.
 analysis of, B., 771.
 with magnesium, A., 158; (P.), B., 157, 1099.

Aluminium alloys, with magnesium, effect of purity on mechanical properties of, B., 729.
 heat treatment of, (P.), B., 236.
 breakdown of solid solution in, A., 1199.
 increasing corrosion-resistance of, (P.), B., 557, 957.
 effect of heat treatment on corrosion of, B., 65.
 with magnesium and nickel, B., 808.
 with magnesium and silver, A., 158.
 with magnesium and zinc, age-hardening of, B., 771.
 with manganese and tin, A., 439.
 with nickel, A., 158.
 heat-resisting, (P.), B., 638.
 with silicon, A., 693.
 production of, by Dnieper Aluminium Combine, B., 1049.
 removal of hard spots from, (P.), B., 414.
 crystal structure of, A., 926.
 coating compositions containing, (P.), B., 110.
 with silicon and phosphorus, (P.), B., 66.
 with silver, A., 576.
 solid solutions in, A., 1455.
 with titanium, under-cooling of, A., 291.
 with zinc, A., 693; (P.), B., 235, 236.
 X-ray study of, A., 1455.
 ageing of, B., 191.
 aluminium-plated, uses of, B., 678.
Aluminium compounds, thixotropy in suspensions of, A., 1074.
Aluminium salts, use of, in production of textiles, B., 19.
 effect of, in diet, A., 1160.
 basic, solutions of, B., 493.
 complex, tanning with, B., 469.
Aluminium arsenate, crystal structure of, A., 1060.
 bromide, band spectrum of, A., 562, 913.
 conductivity of systems of, with cuprous bromide in ethyl bromide, A., 449.
 electrolysis of mixed solutions of potassium bromide and, in ethyl bromide, A., 942.
 carbide, crystal structure of, A., 17.
 chloride, production of, from the oxide, B., 848.
 by-product in, from kaolin, B., 453.
 use in Portland cement of residue from, B., 1095.
 pozzuolanic materials from residues in, B., 547.
 use of waste from, in oxidation of sulphur dioxide, B., 269.
 recovery of, from oil refining residues, (P.), B., 21.
 rotation structure of spectrum of, A., 280.
 free energy and heat of formation of, A., 304.
 crystal structure of, A., 920.
 reactions catalysed by, A., 1221, 1368.
 catalysis of hydrogen interchange by, A., 454.
 equilibria of, with sodium and potassium chlorides, A., 168.
 anhydrous, production of, from kaolin, B., 99.
 purification of, B., 723.
 fluoride, manufacture of, B., 354; (P.), B., 187, 306, 495, 629.
 ammonium fluoride, production of, (P.), B., 629.
 halides, band spectra of, A., 144.
 hydride, band spectrum of, A., 427.

Aluminium hydroxide, purification of, (P.), B., 306.
 drying of, (P.), B., 495.
 properties of, crystallised from calcium aluminate solutions, A., 833.
 adsorption of, by kieselguhr, A., 1070.
 adsorption of sodium carbonate and hydroxide by, A., 1315.
 colloidal, manufacture of, (P.), B., 227, 494.
 decolorising power of, B., 60.
 hydroxide and oxide, thermal investigation of mixtures of, A., 1333.
 iodate nitrate, crystal structure of, A., 1060.
 nitrate, solubility of, with iron, potassium, and sodium nitrates, A., 928.
 vapour pressure and activity coefficient of aqueous solutions of, A., 302.
 crystallisation of, from treatment of leucite, etc., (P.), B., 61.
 thermal decomposition of, A., 945.
 nitride, heat of formation and specific heat of, A., 1324.
 oxide, electro-chemical preparation of, from the sulphate, A., 942.
 extraction of, from clay and from Khakassia shale, B., 20.
 production of, (P.), B., 355, 849.
 from aluminates, B., 990.
 from bauxite, (P.), B., 270.
 from Poshan bauxite, B., 305, 1141.
 from Tikhvinsk bauxite, B., 354.
 plant for nitrate method of, B., 990.
 by "Nisaluminium" method, B., 802.
 from shale ash, B., 802.
 from Georgia shale and wyomingite, B., 627.
 from urtite, B., 20.
 production of barium aluminate for, B., 20.
 and hydroxide, (P.), B., 673.
 and zirconium, B., 305.
 electrolytic production of, from clay, B., 99.
 from the sulphate, B., 723.
 phosphorescence of, A., 915.
 electrolysis of melts of cryolite and, B., 65.
 dielectric properties of electrolytic layers of, A., 1303.
 cation exchange between silicates and, A., 293.
 thermochemistry of systems of, with lime and silica, A., 36.
 thermionic properties of systems of lithia, silica, and, A., 140.
 adsorption by, of methyl ether, A., 696, 1457.
 dispersing action of aqueous acids on, A., 296.
 crystal structure of γ -form of, A., 1450.
 gels, effect of water and alkali on refractive index of mixtures of, with silica gel, A., 932.
 adsorption by, of methylamine, A., 29.
 β - α transformation of, A., 812.
 equilibrium of, with alkali oxides, carbon dioxide, lime, and silica, A., 1323.
 with calcium, aluminium, and ferric oxides, B., 547.
 with calcium and ferric oxides and silica, A., 448.
 with calcium and potassium oxides, A., 448.
 with ferric oxide, A., 440.
 with ferric oxide, lime, and silica, in cement, B., 675.

- Aluminium oxide**, action of sodium chloride on ferric oxide, silica, felspar, kaolin, salt glaze, and, B., 187.
catalytic dehydration of *n*-butyl alcohol by, A., 958.
catalytic dehydration of ethyl alcohol by, A., 1210.
reaction of, with lithium carbonate, A., 1323.
reducing porosity of crucibles, etc., of, B., 804.
polishing powder from, (P.), B., 455.
pulmonary lesions caused by, A., 896.
hydrated, A., 582.
X-ray analysis of, A., 285.
determination of, in steel, B., 410.
phosphate, use of, as fertilisers, B., 866.
phosphates, complex, A., 166.
orthophosphate, crystal structure of, A., 1194.
alkali silicates, A., 168, 1462, 1470.
sulphate, production of, (P.), B., 270.
removal of iron from, B., 802; (P.), B., 227, 832, 948.
equilibrium of, with sodium sulphate and water, A., 935.
complex formation of, with tartaric acid, A., 961.
determination of, in presence of sulphuric acid, A., 186.
Aluminates, desilication of, B., 146.
stabilities of, A., 1204.
tanning action of, B., 564.
cement resistant to, B., 993.
Aluminium detection, determination, and separation:—
micro-analysis of, B., 273.
spectrographic analysis of, B., 553.
detection and distribution of, in plants, A., 1044.
detection of, with alkannin and naphthazarin, A., 837.
in presence of iron and chromium by benzoate method, A., 187.
determination of, with ammonium hydrogen carbonate, A., 951.
colorimetrically, with alizarin, A., 464.
with eriochrome cyanine, A., 1094.
with 8-hydroxyquinoline, A., 1216.
volumetrically, A., 55, 1338, 1474.
in its acetate, A., 186.
in ash of biological material, spectro-photographically, A., 907.
in presence of chromium and iron, A., 838.
in chromium steel and alloys, electrolytically, B., 807.
in conserves, B., 1021.
in copper-zinc alloys, B., 64.
in iron ores, B., 63.
in plants, etc., A., 186.
in soils, B., 865.
in steel, B., 310.
determination and separation of, with 8-hydroxyquinoline, A., 187.
separation of, from alkaline-earth metals, A., 1216.
from beryllium, A., 597.
from cobalt, iron, and nickel, A., 1474.
from cobalt, manganese, nickel, and zinc, A., 1338.
Aluminium articles, coloured, manufacture of, (P.), B., 362.
die-cast, finishes for, B., 32.
Aluminium bronze, oxide films on, A., 1469.
die-casting with, B., 411.
 β -Aluminium bronze, transformations in, A., 23.
Aluminium foil, enamelling of, (P.), B., 1095.
heat insulation with, B., 312.
- Aluminium ores**, recovery of aluminates from, (P.), B., 147.
siliceous, decomposition of, (P.), B., 227.
Aluminium rods, crystalline, Young's modulus of, A., 922.
Aluminium vessels, welding of, for transport and storage of nitric acid, B., 501.
Aluminium wire, cold-drawn, endurance limit of, under vibrational stresses, B., 499.
deformed, effect of annealing on recrystallisation of, B., 1049.
rolled, detection of copper particles on, B., 808.
Aluminosilicates, base exchange capacity of, B., 740.
analysis of, B., 493.
Alunite, effect of roasting on solubility of, B., 802.
Amalgams. See Mercury alloys.
Amalgamation, thermodynamics of, A., 581.
Amanita toxin, A., 267.
Amaranth, Chinese, vitamin-C content of, A., 1430.
Amarantus retroflexus, oil content of, B., 814.
Amaurosome armillatum, control of, B., 822.
Amazonite, rare alkali metals in, A., 727.
Amber, A., 754; B., 465.
origin, formation and processing of, A., 1431.
insulating power of, A., 683.
Amblygonite, treatment of, (P.), B., 494.
Ambrettolide, pure, preparation of, A., 65.
Ameiurus, colour changes in, in relation to neurohumours, A., 1157.
Amides, production of, (P.), B., 139, 218.
dipole moments and molecular structure of, A., 283.
near infra-red absorption spectra of amines and, A., 1444.
fused, Raman spectra of, A., 914.
dehydration of, with formation of nitriles, A., 72.
catalytic hydrogenation of, to amines, A., 70; (P.), B., 487.
saponification of, by sodium carbonate, A., 173.
manufacture of alkylene oxide derivatives of, (P.), B., 139.
manufacture of sulphuric acid derivatives of, (P.), B., 665.
utilisation of, in nitrogen metabolism, A., 1407.
aromatic, manufacture of, (P.), B., 14.
of α -methoxy-acids, action of sodium hypochlorite on, A., 72.
unsymmetrical, formation of, A., 976.
titration constants of, A., 170.
Amidines, aromatic, additive compounds of, with glyoxal, A., 1133.
cyclic, alkylated, manufacture of, (P.), B., 840.
of holocaine type, and their derivatives, A., 1490.
Amidoximes, formation of salts of, A., 479.
Amines, formation of, by catalytic hydrogenation of amides, A., 70.
manufacture of, (P.), B., 139, 218, 487, 940.
from amides, (P.), B., 487.
near infra-red absorption spectra of amides and, A., 1444.
dissociation constants of, A., 936.
ionisation constants of, in ethyl alcohol, A., 1321.
liquid, detection of, microchemically, A., 1516.
- Amines**, adsorption of, by sulphide ores, A., 1458.
benzylation of, A., 335.
condensation of, with ethyl chloroformyl-cholate, A., 1366.
action of perthiocyanic acid on, A., 1488.
reaction of, with deuterium oxide, A., 965.
condensation products of ketones and, (P.), B., 841.
manufacture of compounds of, with alkali and alkaline-earth halides, (P.), B., 1165.
compounds of, with sulphur dioxide, A., 447.
colour-stabilisation of gasoline by, B., 888.
chemotherapy with, A., 120.
isolation and detection of, in human urine, A., 1007.
aliphatic, manufacture of, (P.), B., 262.
uses of, B., 893.
manufacture of textile assistants from, (P.), B., 92.
cycloaliphatic, manufacture of, (P.), B., 665.
aromatic, manufacture of, (P.), B., 93.
by hydrogenation, A., 854; B., 664.
absorption and fluorescence spectra of, A., 1052.
deamination of, A., 1119.
sulphuric acid as catalyst for ethylation of, by alcohol, B., 137.
halogenation of, by means of chloro-amides, A., 76.
condensation of, with cholesteryl chloroformate, A., 209.
with formaldehyde, A., 1118.
reaction of, with mineral oil sulphonic acids, B., 1081.
action of sulphur on, A., 1118.
oxidation of acetyl derivatives of, A., 854.
production of alkylated derivatives of, (P.), B., 1131.
preparation of mercury derivatives of, A., 1139.
nuclear-substituted, catalytic manufacture of, (P.), B., 218.
primary, recovery of, from aqueous solutions, (P.), B., 621.
reaction of, with 2:4-dinitro-bromobenzene, A., 1465.
manufacture of conversion products of, (P.), B., 1132.
secondary, manufacture of, and their use as rubber antioxidants, (P.), B., 962.
identification of, by means of *p*-bromophenylthiocarbimide, A., 206.
optically-active, stereochemical relationships of, A., 736.
pharmacologically important, synthesis of, A., 1492.
primary, detection of, by means of resorufin, A., 228.
primary and secondary, *p*-chlorobenzazide as reagent for, A., 1117.
secondary and tertiary, manufacture of, (P.), B., 665.
tertiary, influence of acidity on reaction of, with nitrous acid, A., 337.
volatile, effect of, on permeability of animal membranes, and their micro-detection, A., 639.
differentiation of, by chloroanil, A., 769.
Amino-acids, A., 92, 489, 850.
synthesis of, A., 628, 1379.
role of sulphides in hydantoin synthesis of, A., 628.
photosynthesis of, A., 178.

- Amino-acids**, physical chemistry of, A., 26, 695, 696, 1467.
separation of mixtures of ammonium sulphate and, (P.), B., 1085.
and their compounds, microscopy of, A., 1516.
molecular heat capacities of, A., 1204.
Raman effect in solutions of, A., 1190.
heats of solution and dilution and specific heats of solutions of, A., 304.
compressibility of solutions of, A., 295.
and their derivatives, solubilities, densities, and heats of solution of, A., 695.
distribution coefficients of, between butyl alcohol and water, A., 696.
equilibria of, with aromatic aldehydes, A., 491.
deamination of, A., 1014.
reaction of, with formaldehyde, A., 1356.
with salts, A., 1460.
with sugars, A., 332.
influence of, on velocity constants of reactions, A., 1467.
splitting of benzyl group from carbo-benzoyloxy-derivatives and thio-ethers of, A., 628.
complex salts of, A., 737, 1140.
combination of bivalent manganese with, A., 1460.
pharmaceutical products from, (P.), B., 205.
effect of, on sugars, in presence of yeast, A., 1280.
nutrition with purified mixtures of, A., 113.
in proteins of foods, and their determination, A., 1014.
production of, from keto-acids and urea in the liver, A., 1152.
inhibition of cysteine effect by, A., 376.
ketogenesis from, A., 1531.
effect of hormones on intestinal absorption of, A., 1172.
basic, equilibrium of formol titration with, A., 703.
carboxylic, manufacture of, (P.), B., 254.
multivalent, A., 694, 850, 1203.
optically-active, stereochemical relationships of, A., 736.
influence of, on tissue metabolism, A., 1405.
quadrivalent, and their derivatives, synthesis of, A., 850.
racemic, in the animal organism, A., 654.
detection of, colorimetrically, by reaction with phenol and sodium hypochlorite, A., 370.
potentiometric titration of non-aqueous solutions of, A., 450.
determination of, A., 102.
by formaldehyde titration, B., 779.
colorimetrically, by ninhydrin, A., 1044.
in blood, A., 1517.
- α -Amino-acids**, solubility of, in water and alcohol-water mixtures, A., 26.
reaction of, with α -ketonic acids, A., 82.
- β -Amino-acids**, preparation of, A., 1123.
- α - and β -Amino-acids**, action of aromatic sulphonic and hydroxysulphonic acids on, A., 1486.
- Amino-alcohols**, A., 972.
preparation of, A., 209.
manufacture of, from sugars, (P.), B., 539.
condensation of, with phthalic anhydride, A., 619.
with secondary alcoholic function, A., 1362.
- diAmino-alcohols**, aromatic, production of, (P.), B., 840.
- Amino compounds**, heterocyclic, manufacture of, (P.), B., 444.
- Amino-compounds**, determination of, conductometrically, B., 444.
- Amino-ethers**, constitution and pharmacological activity of, A., 397.
aliphatic, production of sulphonic acids of, (P.), B., 984.
- Amino-groups**, formation of, from azido-groups, A., 742.
introduction of, into alkaloids, by sod-amido and potassamide, A., 223, 635, 764, 993, 1136.
into aromatic and heterocyclic nucleus, A., 223.
- α -Amino-ketones**, A., 860.
preparation of, A., 345.
- 1:2-Amino-ketones**, cyclic, manufacture of, (P.), B., 796.
- Amino-olefines**, *N*-disubstituted, synthesis of, A., 742.
- α -Amino-phenols**, migration of acyl groups in derivatives of, A., 1361.
- Aminopyrine**. See *Pyramidone*.
- α -Amino-sulphides**, acetyl derivatives, rearrangement of, A., 485.
benzoyl derivatives, rearrangement of, A., 615.
- α -Amino-sulphones**, acetyl derivatives, rearrangement of, A., 485.
- $\alpha\alpha$ -Aminosulphonic acids**, acetylation of, A., 71.
- Ammines**, crystal structure of, A., 920.
complex, formation and stability of, A., 917.
of trivalent metals, A., 1471.
from cyclic diamines and metallic salts, A., 1089.
metallic borofluoride, thermal decomposition of, A., 313.
- Ammodendrine**, and its salts, A., 1387.
- Ammodendron Conollyi**, alkaloids of, A., 1387.
- Ammonia**, and its derivatives, electron configuration of, A., 1188.
rotational level of, A., 810.
vibration frequencies of, A., 685.
in Baltic sea-water, A., 1343.
synthesis of, (P.), B., 61, 186.
temperature control in, (P.), B., 494.
at high pressures, A., 455.
catalysts for, B., 801.
activation of catalysts for, (P.), B., 494.
reduction of catalysts for, B., 1141.
iron catalysts for, B., 20, 268, 801.
determination of potassium in catalysts for, B., 225.
titanomagnetites as catalysts for, B., 99.
purification of gases for, (P.), B., 440, 452.
electrothermal synthesis of, A., 176.
production of, (P.), B., 672.
in gasworks and coke-oven plants, B., 225.
in iron blast furnaces, B., 25.
and sodium carbonate and hydroxide, (P.), B., 269.
recovery of, in wood pulp manufacture, (P.), B., 144.
separation of, from gases, (P.), B., 837.
purification of, (P.), B., 494.
absorption spectrum of, A., 1188.
rotation spectrum of, A., 806, 1444.
ultra-violet absorption spectrum of, A., 912, 1298.
Schuster bands in discharges in, A., 805.
blue glow on surfaces in electric discharge in, A., 805.
cathodic catalysis of, in electric discharge, A., 1087.
Kerr effect in, A., 1192.
- Ammonia**, formation of negative ions in, A., 140.
exchange of deuterium between hydrogen and, A., 1460.
exchange between deuterium and, on catalytic iron, A., 710.
heat of formation of, A., 168.
gaseous, liquid, or in solution, near infra-red absorption spectra of, A., 563.
liquid, as solvent, A., 1077.
absorption spectra of solutions in, A., 1443.
heats of solution and reaction in, A., 37.
solubility of salts in, A., 818.
solubility of alkali chlorides in, A., 1314.
action of, on phosphorus pentachloride, A., 945.
preparation of ethers in, A., 605.
determination of, of moisture, B., 492.
distillation of mixtures of sulphur dioxide, water, and, B., 724.
partial vapour pressure of solutions of sulphur dioxide and, B., 628.
absorption of, in boric acid, A., 718.
adsorption of, by silica gel, A., 29.
equilibria of, with ammonium and hydrazine trinitrides, A., 35.
with hydrogen chloride and water, A., 583.
energy levels for, A., 569.
catalytic combustion of, A., 1209.
simultaneous catalytic dehydration of ethyl alcohol and, A., 742.
oxidation of, B., 225.
catalysts for, A., 43; B., 590.
on platinum gauze, A., 941; B., 402.
platinised copper gauze for, B., 946.
catalytic oxidation of mixtures of methane and, A., 1329.
photodecomposition of, A., 47, 1331.
reaction of, with chlorine monoxide, A., 1334.
colour reaction of, with hypobromite and thymol, A., 1337.
corrosion of platinum gauze by mixtures of air and, B., 1042.
preparation of carbamide from carbon dioxide and, A., 966, 1357.
compound of, with lithium, A., 590.
with rhodium, A., 461.
derivatives, near infra-red absorption spectra of, A., 563.
addition of, to ethylene, A., 849.
removal of, from gases, (P.), B., 214, 294, 983.
fertilising action of, B., 422.
physiology of action of, on plants, B., 1110.
in internal fluids of invertebrates, A., 1524.
rôle of, in the organism, A., 654.
origin of, in blood, A., 642.
formation and content of, in blood, A., 103.
formation of, in red blood-corpuscles of birds, A., 229.
in blood and urine after introduction of urease, A., 508.
liberation of, by the brain after natural stimulation, A., 1407.
formation of, from histamine, A., 659.
in muscle, A., 110, 387, 1004.
effect of bile acids on excretion of, in urine, A., 1158.
biological oxidation of, A., 787.
anhydrous, use of, in refining of petroleum oils, B., 483.
determination of, A., 595, 1092.
colorimetrically, A., 463.
microchemically, A., 114.

- Ammonia**, determination of, in air and water, A., 184.
in biological fluids, A., 1436.
in aqueous hydrocyanic acid, A., 53.
in tobacco, A., 133.
"free," in urine, A., 1267.
determination in, of methylamine, A., 1516.
- Ammonia-cellulose**, A., 1486.
- Ammonia electrodes**. See under Electrodes.
- Ammoniacal liquors**, purification of, (P.), B., 662.
dry lime treatment of, (P.), B., 403.
removal of phenols from, (P.), B., 440.
use of, as nitrogen fertilisers for vegetables, B., 866.
gas works, treatment of, B., 47.
- Ammoniates**, effect of water containing deuterium oxide on, A., 1332.
- Ammonium alloys with mercury**, electrochemistry of, under pressure, A., 826.
decomposition of, A., 173.
- Ammonium compounds**, fixation and utilisation of, in soils, B., 687.
quaternary, manufacture of, (P.), B., 396, 1132.
- Ammonium salts**, transition in, at -40° , A., 919.
activities of, in liquid ammonia, A., 1077.
nutritive value of, A., 113, 1178.
determination of, B., 1043.
- Ammonium arsenates**, thermochemistry of, A., 936.
*ortho*arsenates, A., 1213.
aurothiosulphate, preparation and properties of, A., 49, 366.
azide, preparation of, from sodium azide, A., 50.
equilibria of, with ammonia, A., 35.
bromide, structure of, at low temperatures, A., 570.
crystal structure of, at -40° , A., 433.
hydrogen carbonate, equilibria of, with sodium sulphate and water, A., 168.
chlorate, spontaneous decomposition of, B., 186.
perchlorate, decomposition products of, A., 313.
chloride (*sal ammoniac*), occurrence of, at Tamaki, Auckland, A., 61.
manufacture of, and calcium sulphate, (P.), B., 672.
separation of, from alkali salts, (P.), B., 899.
electrolysis of aqueous solutions of, A., 942.
crystal structure of, at -30° , A., 433.
red crystals of, A., 945.
equilibria of, with water and potassium or sodium chlorides, A., 303.
hemolysis by, A., 1519.
Japanese, for dry cells, B., 681.
chloride and nitrate, equilibrium of, with water, A., 1323.
chromate, action of hydrogen sulphide on, A., 1470.
fluoborate, crystal structure of, A., 1450.
aluminium fluoride, production of, (P.), B., 629.
halides, Raman effect in, A., 564.
iodide, equilibrium of, with antimony iodide and water, A., 1077.
with bismuth iodide, A., 1077.
*tri*iodide crystals, structure of, A., 812.
molybdate as reagent in microchemical analysis, A., 720.
nitrate, production of, (P.), B., 146.
spontaneous decomposition of, in melts, A., 50, 460.
- Ammonium nitrate**, decomposition of, during evaporation of its solutions, B., 492.
corrosion of metals by solutions of, in liquid ammonia, B., 1091.
trinitride. See Ammonium azide.
phosphate, manufacture of, and fertilisers, (P.), B., 672.
heat of solution and of dilution of, A., 705.
orthophosphates, A., 1213.
ruthenate, reduction of, A., 594.
sulphate, production of, (P.), B., 147, 306, 672, 991.
apparatus for, (P.), B., 305.
from Don gypsum, B., 492.
from gypsum and phosphogypsum, B., 492, 671.
and ferric oxide, from ferrous sulphate solutions, B., 722.
and potassium nitrate, (P.), B., 899.
and sodium carbonate from sodium sulphate, B., 145.
crystalline, B., 492.
separation of mixtures of amino-acids and, (P.), B., 1085.
equilibrium of, with calcium sulphate and water, A., 704.
with potassium sulphate and water, A., 1461.
with sulphuric acid and water, A., 36.
optical properties of double salts of calcium sulphate and, A., 684.
fertilising action of, B., 820.
production of fertilisers from, (P.), B., 543.
sulphate nitrate, production of, B., 801.
ferric sulphate, basic, A., 51.
persulphate, crystal structure of, A., 152.
mercury sulphites, A., 1469.
- Ammonium organic compounds**, quaternary, formation of, in benzene solution, A., 1208.
manufacture of, (P.), B., 941.
- Ammonium salts**, cyclic, conversion of, into linear polymerides, A., 965.
optically active, use of, in detection of double decomposition in non-ionising solvents, A., 202.
- Ammophos**, production of, B., 402.
plant-assimilability of complex salts formed in, B., 778.
determination in, of nitrogen, B., 60.
- Ammosesinol**, and its derivatives, A., 219.
- Ammunition**, external lubricant for, (P.), B., 47.
- Amniotic fluid**, composition of, A., 234.
human, sugar content of, A., 378.
- Amniotin**, effect of, on atrophied endocrine glands, A., 791.
- Amœba**, crystals found in, A., 1166.
sterile, cultivation of, on media without solid food, A., 1166.
- Amœba proteus**, permeability of, to water, A., 1027.
- Amœbiasis**, antigens for complement fixation in, A., 1395.
- Amœbicides**, production of, (P.), B., 973.
- Anoora rohituksa**, oil from seeds of, B., 814.
- Amorphous bodies**, energy levels of electrons in, A., 282.
- Amphibia**, embryo-chemistry of, A., 1535.
metabolism of, during development, A., 889.
- Amphibian organiser**, chemical nature of, A., 519.
- Amphibole** from British Columbia, A., 842.
from Zlatibor, W. Serbia, A., 956.
- Amygdalin**, catalytic hydrogenation of, A., 1363.
- Amygdaloside** in plants, A., 1181.
- Amygdonitrile glucoside** in plants, A., 1181.
- n-Amyl alcohol**, Raman spectrum of, A., 11.
detection of, in ethyl alcohol with vanillin, B., 137.
- isoAmyl alcohol**, properties of mixtures of, with ethyl alcohol and water, A., 1067.
mixtures of, with propyl alcohol and water, A., 1457.
- Amyl alcohols**, production of, from amylene fraction of gasoline, B., 1031.
- Amyl chlorides**, production of, from amylene fraction of gasoline, B., 1031.
- n-Amyl p-nitrobenzoate**, A., 479.
sulphate, A., 729.
- isoAmyl $\gamma\gamma$ -diethoxy-n-propyl ether**, A., 846.
- tert.-Amyl bromide**, preparation of, A., 605, 1348.
halides, action of inorganic bases on, A., 1349.
mercaptan, A., 471.
- p-Amylacetophenones**, A., 1369.
- α -Amylacrylonitrile**, A., 610.
- isoAmylamine**, photo-sensitised oxidation of, A., 311.
- 8-isoAmylamino-6-methoxyquinoline**, and its hydrochloride, A., 500.
- 2-Amylamino-phenylstibinic acids**, 5-nitro-, A., 876.
- 5-n-Amylamino-o-xylene**, 4-amino-, A., 94.
- Amylase**, development of, during germination of barley, A., 249.
action of amylokinase and trypsin on content of, in cereals, A., 121.
effect of chemicals on activity of, A., 402.
influence of salts on activity of, A., 1535.
amylolytic activity of, A., 1536.
activity of, in taka-diastase, A., 1535.
specificity of, A., 401.
protection against ultra-violet irradiation of solutions of, A., 1024.
action of, in presence of myosin, A., 249.
effect of neutral salts on, on starch, A., 401.
in uterine cancer, A., 514.
of various kinds, action of, on starch, A., 1535.
specificity of, A., 1415.
- "Aspergillus,"** pancreatic, and salivary, dual nature of, A., 783.
of barley-malt, two distinct, A., 1278.
of blood, effect of acetylcholine on, A., 1536.
- liver**, effect of nutrition and of hormones on activity of, A., 1162.
of organs, A., 401.
yeast, A., 1415.
copper and iodine methods for determination of, A., 402.
determination of, photometrically, A., 249.
in human serum, A., 402.
- α -Amylase**, malt, adsorption of, on calcium phosphate, A., 1162.
determination of, A., 897.
- β -Amylase**, action of, on starch, A., 1415.
- α - and β -Amylases**, characterisation of, A., 532.
- 5- β -Amylbarbituric acid**, (P.), B., 205.
- 5-isoAmyl-5-barbiturylacetanilide**, A., 1507.
- isoAmylbindone**, and nitro-, A., 623.
- N-Amyl-p-bromobenzenesulphon-p-anisides**, A., 193.
- α -isoAmyl- γ -butyrolactone**, A., 474.
- n-Amylcarbamie acid**, phenyl ester, A., 71.
- n-Amylcarbamide**, A., 118.
- isoAmyl- β -chlorovinylchloroarsine**, ϵ -chloro-, A., 637.
- β -Amylcinnamylurethane**, A., 486.

- 4-*tert.*-Amyl-*m*-cresol, A., 614.
production of, (P.), B., 940.
- n*-Amyl-*n*-dodecylamine, and its hydrochloride, A., 70.
- Amylenes, polymerisation of, A., 1081.
- 5-*tert.*-Amylfuran-2-carboxylic acid, A., 1128.
- 5-Amyl-2-furfuraldehyde, and its semicarbazone, A., 867.
- 1-*n*-Amyl-3-4-hexahydrobenzpyrrolidine, and its hydrochloride, A., 71.
- n*-Amyl ketone, *mono*- and *di*-bromo-, A., 193.
- β -Amylmalonic acid, diethyl ester, manufacture of, (P.), B., 205.
- 2-Amyl- α -naphthol, A., 485.
- α -Amylodextrin, constitution and molecular structure of, A., 1355.
- Amyloidosis in mice, effect of diet on, A., 513.
- Amylopectin, coacervation and properties of, A., 446.
hydrolysis of, by takadiastase, A., 1535.
- Amylophosphoric acid, complex coacervation of proteins and, A., 446.
- Amylose, molecular size of, and its relation to starch, A., 1226.
hydrolysis of, by takadiastase, A., 1535.
- Amylose B, and its tribenzoyl derivative, A., 70.
- α -Amylose, corn, A., 965.
- β -Amylose, retrograded, A., 965.
- Amyloses, A., 965.
- Amylosynthase, A., 249, 533, 1162.
- o*-Amyloxyaniline, A., 1364.
- Amyloxybenzene, *o*-iodo-, and *o*-nitro-, A., 1364.
- 2'-Amyloxydiphenyl-6-carboxylic acid, 2-nitro-, A., 1364.
- 10-*iso*Amyloxyphæoporphyrin, α -, A., 1383.
- 10-*iso*Amyloxyphyloerythrin, A., 1383.
- iso*Amyloxyvanadylsalicylic acid, esters, A., 1122.
- 2-*n*-Amylphenol, 4-bromo-, production of, (P.), B., 749.
- 4-*n*-Amylphenol, 2-chloro-, and its α -naphthoate, (P.), B., 974.
- p*-*tert.*-Amylphenol, production of, (P.), B., 140.
- p*'-Amylphenyl styryl ketones, A., 1369.
- Amylpyridinium bromide, $\gamma\delta$ -trichloro- β -hydroxy-, A., 1131.
- N*-*n*-Amylsuccinimide, A., 71.
- m*-Amyltoluene, A., 967.
- n*-Amyltoluidines, A., 1488.
- n*-Amyltolylcarbamides, A., 1488.
- α - and β -Amyrone oxides, A., 87.
- Amytal, assimilation of hexoses in narcosis by, A., 241.
effect of, on gastric and salivary secretions, A., 1410.
sugar output of liver during narcosis by, A., 241.
- sodium salt, for anæsthesia in mitochondria, A., 1410.
detoxification of pyrimidone by, A., 1410.
- Anabasine, vapour pressure of, A., 22.
amidation of, A., 223.
sulphate, insecticidal action of, on tobacco plants, B., 1159.
- Anabasine, α -amino-, and its salts, A., 635, 764.
nitration of, A., 1136.
 α - and α' -amino-, A., 1136.
chloro-derivatives, structure of, A., 635, 995.
 α' -chloro-, A., 764.
- Anabasis aphylla*, alkaloids of, A., 97, 227.
- Anacardiaceæ*, poisonous, A., 672.
- Anacardic acid, and its ethyl ester, A., 1123.
- Anacardium occidentale*, production of sugar syrup from, B., 39.
- Anacardol, A., 1123.
- Anæmia, experimental production of, A., 1400.
relation of oxygen pressure to fermentation in, A., 509.
increase in blood-carbon monoxide in, A., 1268.
respiration of red blood-corpuscles in, A., 235.
copper in blood of men and horses in, A., 643.
serum-iron in, A., 381.
effect of copper in, A., 380.
effect of iron and of ultra-violet rays on, A., 235.
effect of yeast extracts in, A., 649.
effect of vitamin-B₂ on, in albino rats, A., 1019.
anti-preparations for, from liver and stomach, A., 885.
in chronic rheumatism, A., 1268.
- Bartonella*, action of copper and spleen extracts on, A., 381.
due to bleeding, curative action of liver extract in, A., 236.
in dogs, new hæmoglobin and protein catabolism in, A., 514.
infectious, action of chemicals on virus of, A., 899.
cholesterolemia in, A., 235.
nutritional, copper therapy in, A., 1148.
relation of, to iron metabolism in infants, A., 1010.
with reference to raw and pasteurised milk, A., 1147.
in dairy cows, A., 1268.
in rats, spleen, hæmoglobin, and corpuscles in, A., 1400.
- pernicious, ætiology of, A., 1268.
colloid-osmotic pressure in relation to lowered water excretion in, A., 774.
coproporphyrin in faeces in, A., 887.
spectrography of gastric juice in, A., 774.
- acid-base equilibrium in plasma in, A., 514.
anti-principle for, in egg-white and rice polishings, A., 885.
treatment of, with Congo-red, A., 1268.
liver and stomach preparations for, A., 514.
decomposition and activity of therapeutics for, A., 1525.
produced by posterior pituitary extracts, A., 902.
secondary, relation between corpuscular respiration and reticulocytes in, A., 1007.
- Anæsthesia, ether, A., 655.
apnoæa in, A., 893.
sex variation in ketonuria from, A., 1410.
local, increase of, by morphine, A., 1532.
- Anæsthesin, determination of, gravimetrically, A., 1259.
- Anæsthetics, manufacture of, (P.), B., 877, 878.
relative effects of, A., 118.
effect of, on muscle, A., 893.
comparative effects of, on nervous system of frogs, A., 118.
action of, on living protoplasm, A., 394.
for hypodermic injection, (P.), B., 478*.
gaseous, for centipedes, insects, and plants, A., 1160.
local, A., 1155.
- Anæsthetics, local, effect of pH and surface tension on activity of, A., 1155.
increase and diminution of convulsive action of, A., 1532.
action of, on cornea, A., 1410.
amino-alcohol, determination of, B., 286.
coloured, A., 969.
- Anagryne, isolation of, from *Ulex europæus*, and its salts, A., 365.
- Anagryis fetida*, alkaloids of, A., 1257, 1433.
- Analgesic composition of stearates and salicylates, (P.), B., 174.
- Analysis, milling of materials for, A., 321.
sampling for, B., 609.
physical methods in, A., 723.
determination of dielectric constants in, A., 53.
by measurement of critical temperatures, A., 437.
by hydrogenation, A., 1516.
methylal as solvent in, A., 182.
use of organic compounds in, A., 720.
removal of phosphates by washing in, B., 723.
induced precipitation in, A., 719.
- acid-base titration, equivalence point in, A., 594.
error of, A., 315.
salt error of indicators in, A., 594.
- acidimetric, extraction method of, A., 947.
errors in, A., 52.
carbonate error in, A., 315.
indicators for, A., 52.
fluorescence indicators for, A., 315.
sodium carbonate as standard in, A., 315.
- See also Acidimetry.
- argentometric titration, indicators for, A., 719.
- biochemical gravimetric, A., 270.
micro-, A., 123, 249.
- bromometric, indicators for, A., 718.
 α -naphthoflavone as indicator in, A., 1471.
- calorimetric, of binary mixtures, A., 927.
- capillary, A., 29.
- chromatographic adsorption, A., 1091.
- colorimetric, A., 947.
comparator for, A., 320.
standard solutions for, A., 835.
precipitation, A., 1068.
- combustion, furnace for, (P.), B., 393.
- conductometric, A., 598, 947.
titration, A., 1476.
- conductometric and potentiometric, A., 45, 182.
- electrochemical, with three electrodes, A., 723.
- electrolytic, use of alcoholic ammonium acetate in, A., 1210.
- electrolytic drop, A., 1473.
- electrometric, continuous-reading apparatus for, A., 466.
salt bridge for, A., 58.
titration, device for holding electrodes in, A., 321.
end-point devices for, A., 839, 948.
- fluorescence, in microchemistry, A., 315.
of leather and textiles, B., 797.
of minerals, A., 186.
with uranyl salts, A., 56.
- forensic, precipitation of lead chromate in, A., 1182.
- iodometric, A., 717.
- magneto-optical, A., 594, 722, 1342.
- microchemical, A., 835, 949, 1474.
apparatus for, A., 1476.
photo-electric colorimetry in, A., 1097.
application of catalysis to, A., 711.

Analysis, microchemical, mercuric sulphate reagent for, A., 186.
 Pregl's method of, A., 315, 369, 1474.
 use of quinaldine acid in, A., 318.
 use of, in industry, A., 1001; B., 177.
 alkalimetric, A., 836.
 electrolytic, apparatus for, A., 722.
 iodometric, A., 184, 1091.
 qualitative, A., 315.
 by electrolysis and spectrography, A., 837.
 with picric acid, A., 949.
 removal of phosphoric acid in, A., 1337.
 use of styryl dyes in, A., 1473.
 titration, apparatus for, A., 1098.
 volumetric, use of indigo-carmino in, A., 1094.
 photo-electric, of gases, (P.), B., 755.
 polarimetric, A., 182.
 potentiometric, A., 720.
 bimetallic electrodes for, A., 952.
 precipitation, theory of, A., 947.
 systematic, A., 55, 185.
 titration, with electrodes of the second kind, A., 948.
 in non-aqueous solutions, A., 52.
 of acids and alkalis, A., 182.
 precipitation-titration, of anions, use of lead nitrate in, A., 948.
 qualitative, A., 835.
 application of flotation in, A., 187.
 of anions, by drop reactions, A., 316.
 effect of cations on, A., 317.
 of cations, without use of hydrogen sulphide, A., 317.
 of metals of Group III, removal of fluorides, oxalates, phosphates, silicates, and silicofluorides in, A., 1472.
 precipitation of barium in copper-tin group in, A., 54.
 benzoate method for separation of iron, aluminium, and chromium in, A., 187.
 in presence of phosphates, A., 837.
 inclusion of rarer metals in, A., 56.
 borax beads in, A., 55.
 inorganic, A., 596.
 organic, reactions and reagents for, A., 369.
 qualitative and quantitative, ash-free plates for filtration in, B., 875.
 quantitative, use of concentration cell in, A., 1336.
 wash-bottle for, A., 321.
 removal of iron in, A., 55.
 of metals of the arsenic group, A., 1092.
 X-ray, sensitivity of, A., 1471.
 quantitative, with cathode-ray tube, A., 466.
 semi-micro-, inorganic, A., 1095.
 spectrographic. See Spectrographic analysis.
 spectrophotometric. See Spectrophotometric analysis.
 volumetric, by Fajan's method, A., 836.
 apparatus for photo-electric titration in, A., 58.
 new indicators and reagents in, A., 182.
 indicators for use with dichromate solutions in, A., 56.
 use of adsorption indicators in, A., 53.
 standard solutions for, A., 315.
 in alkaline solutions, A., 838, 1094.
 adipic acid as standard in, A., 462.
 use of chloramine-T in, A., 56.
 use of cyanogen bromide as standard in, A., 183.
 precipitation with lead nitrate in, A., 1472.

Analysis, volumetric, use of alkaline permanganates in, A., 55.
 use of silver as standard in, A., 54.
 acid-base, inflexion point in, A., 170.
 indirect, of organic compounds, B., 91.
Anamirta cocculus, preparation of picrotoxin from berries of, A., 983.
Anaphylaxis, colloidal nature of precipitates in, A., 116, 644.
 effect of magnesium chloride on, A., 1160.
 in vitro, colloidal characteristics of, A., 895.
Andalusite, effect of repeated firing on, B., 768.
Andalusite-dumortierite at Orcana, Nevada, A., 955.
Andrographis paniculata, crystalline bitter principle from, A., 1549.
Androkinin in urine during menstruation, A., 413.
Andropogon citratus, cultivation of, B., 566.
Androstane, A., 414.
Androstanediol, A., 1033.
Androstanediols, and their methyl derivatives, A., 1125.
Androstanedione, A., 414.
Androstanone, and its semicarbazone, A., 414.
 isolation of, from oxidation of cholestane, A., 542.
Androstendiol, and its acetates, A., 1370.
Androstene-3:17-diol, A., 1500.
trans-Δ⁵-Androsten-3:17-diol, and its acetates, A., 1371.
Androstenedione, effect of, on sexual organs of male rats, A., 1285.
Androsten-17-ol-3-one, A., 1500.
Δ⁴-Androsten-17-ol-3-one, and its synthesis, A., 1033, 1371.
 formation and preparation of, and its acetate, A., 1370.
Δ⁴-Androsten-3-one, 17-hydroxy-, acetyl derivative, A., 1371.
Androsterone, A., 1370.
 and its derivatives, A., 346, 413.
 formation of, from 3-hydroxyallocholanolic acid, A., 1370.
 biological activity of derivatives of, A., 1174.
 response of capon's comb to, A., 1033.
 effect of, on rats, A., 667.
 on castrated rats, A., 1426.
 on accessory reproductive organs of castrated rats, mice, and guinea-pigs, A., 1033.
 treatment with, and with oestrone, of rats, A., 1545.
 assay of, A., 1174.
isoAndrosterone acetate, A., 1033.
Androsteronediol, effect of, on castrated rats, A., 1426.
 fat-soluble, assay of, A., 1427.
Androsterone-3:17-dione, preparation of, A., 1125.
Anemone sulcata, carotenoids of, A., 1005.
Anemonin, action of, on micro-organisms, A., 1281.
Anemonsite, in essexite, A., 1220.
Anethole, recovery of, from pine oil, (P.), B., 878.
 reactivity and Raman spectrum of, A., 1446.
Angelica archangelica, angelicin from, A., 868.
Angelica-root oil, B., 45.
Angelicin, synthesis of, A., 868.
Angina pectoris, effect of total ablation of thyroid on, A., 516.
Anhalamine, constitution of, A., 226.
Anhalidine, A., 873.

Anhalinine, and its hydrochloride, A., 635.
Anhalonine, constitution of, A., 635.
Δ-Anhalonine, and its synthesis, A., 1389.
Anhalonium Lewinii, alkaloids of, A., 635, 873.
Anhydrase, activity of, in blood and celomic liquid of invertebrates, A., 102.
Anhydrides, aliphatic, manufacture of, (P.), B., 348, 442.
Anhydrite, infra-red spectrum of, A., 145.
 action of chloride solutions on, B., 628.
 recovery of sulphur from, (P.), B., 495.
Anhydro-N-acetylcatarnine derivatives, A., 995.
Anhydroaminotricarballyltetra-amide, A., 850.
Anhydroazatrinone, and its derivatives, A., 611, 612.
Anhydrobromocotarninonitromethane, and its hydrochloride, A., 1513.
Anhydrobufotalonic acid, A., 749.
Anhydrocotarnino-p-acetamidotoluene, A., 767.
Anhydrocotarnino-p-aminoacetophenone, and its acetyl derivative, A., 1388.
Anhydrocotarninocarbamide, A., 1388.
Anhydrocotarnino-2-nitroresorcinol, and its hydrochloride, A., 1388.
Anhydrocotarninophthalimidine, A., 1388.
Anhydrocotarninoresorcinol methyl ether, A., 1388.
Anhydrocuscatalin, A., 1551.
Anhydrodecabhydrostrychnidine, salt of, with zinc chloride, A., 367.
Anhydrodigitoxigenins, and their acetyl derivatives, A., 1226.
β-Anhydrodigitoxigenone, A., 1226.
Anhydro-7:8-di-2'-hydroxy-5'-methylphenyl-acenaphthene-7:8-diol, A., 86.
Anhydro-7:8-di-2'-hydroxynaphthylacenaphthene-7:8-diol, A., 86.
Anhydroethylenetetracarboxylic acid, derivatives of, A., 328.
Anhydroformaldehydecarbamic acid, β-chloroethyl ester, A., 1228.
Anhydroformaldehydecarbamylocholine chloride, A., 1228.
Anhydrofubugetin, and its derivatives, A., 220.
β-Anhydrohexitol α-p-toluenesulphonate, and its derivatives, A., 1104.
α-Anhydrohispidogenin-A, and its diacetyl derivative, A., 624.
β-Anhydrohispidogenin-A, A., 624.
Anhydro-3-hydroxymercuri-5-n-butyl-β-resorcylic acid, A., 1364.
Anhydro-3-hydroxymercuri-5-hexyl-β-resorcylic acid, A., 1364.
Anhydro-3-hydroxymercuri-5-propyl-β-resorcylic acid, A., 1364.
Anhydro-8-keto-7:7-di-2'-hydroxy-5'-methylphenylacenaphthene, A., 86.
Anhydro-8-keto-7:7-di-2'-hydroxynaphthylacenaphthene, A., 86.
Anhydrolysylglutamide, and its hydrochloride, A., 851.
Anhydromaltosazone, A., 1225.
3:4-Anhydro-β-methylhexoside, A., 964.
"Anhydron". See Magnesium perchlorate.
Anhydro-osazones, A., 1225.
Anhydrophenol-β-d-glucoside, and its diacetate, A., 330.
Anhydrophorbol. See Crotophorbolone.
Anhydroplatynecine, and its salts, A., 1387.
Anhydrosemi-β-carotenone, A., 612.
isoAnhydrostrophanthidin, and its derivatives, A., 624.
Anhydrostrophanthidins, A., 624.

- Anhydrotetramethylhazeic acid, and its methyl ester, A., 757.
- Anhydrotetramethylhazeic acid, and its lactone, A., 757.
- Anilides, fused, Raman spectra of, A., 914.
- action of thionyl chloride on, A., 854, 1359.
- Aniline, production of, B., 664.
- coloration of, B., 664.
- ultra-violet absorption spectra of mixtures of *m*-cresol and, A., 428.
- vapour, anti-Stokes fluorescence of, A., 1054.
- surface tension and partial vapour pressure of aqueous solutions of, A., 930.
- physical properties of mixtures of, with cyclohexane, A., 25, 695.
- surface tension of systems of, with cyclohexane, A., 438.
- equilibrium of, with formic acid and water, A., 935.
- simultaneous catalytic dehydration of ethyl alcohol and, A., 742.
- condensation of, with glycerol, A., 81.
- condensation reactions of, with formaldehyde, and preparation of plastic masses, B., 734.
- addition of, to olefines, A., 1488.
- reaction of, with diphenylsuccinic anhydrides, A., 489.
- with epichlorohydrin and chlorohydroxypropylphthalimide, A., 1118.
- with oxalic acid, A., 1483.
- with sulphur, A., 1118.
- and bromo-, chloro-, and nitro-, *p*-bromophenylthiocarbamides, A., 206.
- compound of, with phenol, A., 1488.
- complexes of picrates and, A., 166.
- determination in, of nitro-compound, B., 584.
- Aniline, 2-amino-5-hydroxy-, 2:5-diacetyl derivative, A., 1508.
- 2-bromo-4-nitro-, preparation of derivatives of, A., 1253.
- p*-chloro-, thermochemistry of diazo-derivatives of, A., 169.
- 3:5-dihalogeno-derivatives, derivatives of, A., 1231.
- nitro-derivatives, solubilities and activity coefficients of, in solutions of salts, A., 159.
- rate of reaction of, with benzyl bromide, A., 335.
- mercurichlorides of, A., 1139.
- o*-nitro-, determination of, in presence of para-isomeride, B., 182.
- p*-nitro-, production of, B., 91.
- Anilines, action of, on saccharin and thio-saccharin, A., 634.
- Aniline black, production of, on nitro-genous fibres, B., 94.
- nitrobenzene compound, B., 669.
- Aniline-black *E*, production of, B., 94.
- Aniline diazo-black *BC*, production of, B., 264.
- Aniline dyes, alkaline corrosion of metals in manufacture of, B., 140.
- for wood stains, B., 1004.
- Aniline oil, electrolytic oxidation of, B., 1037.
- Aniline-*m*-sulphonic acid, identification of, A., 206.
- Aniline-*p*-sulphonic acid, identification of, A., 206.
- diazotised, reactions of, A., 969.
- Anilinoacetamide, formation of, and its derivatives, A., 613.
- 4-Anilino-4-*p*-acetamidoanilinoanthraquinone-2-sulphonic acid, 1-amino-, production of, (P.), B., 895.
- Anilinoacetonitrile, conversion of, into the amide by hydrogen peroxide, A., 613.
- Anilinoalkylbarbituric acids. See Alkyl-5-barbiturylacetanilides.
- 2-Anilino-benzenesulphonic acid, 2-*o*-nitro-, A., 486.
- 4-Anilino-4'-benzhydrodiphenyl, manufacture of, (P.), B., 93.
- 1-Anilinobenzthiazole, 5-bromo- and 5-chloro-*p*-cyano- and -*p*-iodo-, and 5-iodo-*p*-bromo-, -*p*-chloro-, -*p*-cyano-, and -1-nitro-, A., 364.
- α -Anilino- Δ^2 -butylene, derivatives of, A., 205.
- α -Anilinoisobutyric acid, *N*-nitroso-, A., 1232.
- β -2-Anilinocamphor-10-sulphonic acid, A., 1503.
- Anilino-carbamic acid, cholesteryl ester, A., 209.
- 5-Anilino-5'-carboxy-4:4'-dimethyl-3:3'-di-(β -carboxyethyl)pyrromethene, and its trimethyl ester, A., 364.
- 5-Anilino-5'-carboxy-4:4'-dimethyl-3:3'-diethylpyrromethene, and its methyl ester, A., 364.
- 4-Anilino-2-cetyloxyanthraquinone, 1-amino-, manufacture of, (P.), B., 763.
- 5-Anilino-2-chloromethylthiol, A., 854.
- 5-Anilino-3-(5'-chloro-2'-nitrophenyl)-1:3:4-thiodiazol-2-one, A., 855.
- 4-Anilino-2-*p*-chlorophenylquinoline, and its salts, and derivatives, A., 357.
- β -Anilino-crotonochloroanilides, chloro-, A., 336.
- β -Anilino-crotononitroanilides, nitro-, A., 335.
- α -Anilino-dibenzyl ketone, A., 1241.
- 9-Anilino-3:6-dithoxy-10-ethylacridinium chloride, A., 1132.
- 9-Anilino-3:6-dithoxy-10-methylacridinium chloride, A., 1132.
- 9-Anilino-1:2-dihydro-3:4-benzacridine, and its picrate, A., 628.
- Anilino-dihydroperoxide, A., 1501.
- 9-Anilino-3:6-dimethoxy-10-ethylacridinium chloride, A., 1132.
- 9-Anilino-3:6-dimethoxy-10-methylacridinium chloride, A., 1132.
- γ -Anilino- α -dimethylaminobutane, and its picrate, A., 478.
- Anilino-*NN*-dimethylenesulphurous acid, 3-nitro-, 4-nitro-2-hydroxy-, and 5-nitro-2-hydroxy-, sodium salts, A., 997.
- 1-Anilino-2:6-dimethyl-4-pyridone, 1-*p*-nitro-, and its *p*-nitrophenylhydrazone, A., 1378.
- 2'-Anilino-diphenyl, 2-amino-2'-(2''-4''-dinitro)-, and its salicylidene derivative, and 2-amino-2'-(2''-nitro-4''-cyano)-, A., 95.
- α -Anilino- γ -diphenylamino- β -hydroxypropene, A., 1118.
- 4-Anilino-2:3-diphenylquinoline, and its derivatives, A., 223, 357.
- 4-Anilino-2-dodecyloxyanthraquinone, 1-amino-, manufacture of, (P.), B., 763.
- β -Anilinoethyl alcohol, β -*p*-amino-, and its salts, A., 969.
- Anilinoethylenetricarboxylic acid, derivatives of, A., 328.
- Anilinoethyliodoarsine, A., 1139.
- N*- β -Anilinoethylmorpholine, and its salts, A., 71.
- γ -Anilino- γ -ethyl-*n*-pentane, and its derivatives, A., 1488.
- N*'- β -Anilinoethyl-*N*-phenylpiperazine, and its trihydrobromide, A., 358.
- 1-Anilino-4-*p*-hydroxyethylaminoanthraquinone, *p*-amino-, manufacture of, (P.), B., 762.
- 1-Anilino-4-*p*-hydroxyethylaminoanthraquinone, *p*-hydroxy-, manufacture of, (P.), B., 762.
- γ -Anilino- β -hydroxypropanesulphonic acid, A., 1111.
- γ -Anilino- β -hydroxy-*n*-propylphthalimide, A., 1118.
- Anilino-4-methoxyphthalaldehydic acid, A., 490.
- Anilino-4-methoxyphthalonic acid, A., 490.
- 1-Anilino-4-methylaminoanthraquinone, *p*-amino-, manufacture of, (P.), B., 762.
- 1-Anilino-5-methylbenzthiazole, *p*-cyano-, and *p*-iodo-, A., 364.
- 1-Anilino-2-methyl-4:5-(α -4'-bromonaphthyl)iminazole, A., 1490.
- β -Anilino- γ -methylbutane, and its *p*-toluenesulphonate, A., 1488.
- Anilino-*N*-methylenesulphurous acid, 3-nitro-, 4-nitro-2-hydroxy-, and 5-nitro-2-hydroxy-, sodium salts, A., 997.
- 3-Anilino-2-methyl- α -naphthaquinone, A., 495.
- 8-Anilino-methylquinoline, and its dihydrobromide, A., 1251.
- 2-Anilinonaphthyl methyl sulphide, 2-*o*-nitro-, A., 486.
- 4-Anilino-2-naphthylthiol, 1-amino-, and dyes therefrom, A., 504.
- 4-Anilino-2-octyloxyanthraquinone, 1-amino-, manufacture of, (P.), B., 763.
- 2-Anilinophenyl methyl sulphide, 2-*p*-chloro-*o*-nitro-, and 2-*o*-nitro-, A., 486.
- 4-Anilino-2-phenyl-5:6-benzoquinoline, and its hydrochloride, A., 357.
- 1-Anilino-2-phenyl-4:5-(α -4'-bromonaphthyl)iminazole, A., 1490.
- 2-Anilinophenylmethylsulphone, 2-*p*-chloro-*o*-nitro-, A., 486.
- 4-Anilino-2-phenylquinoline, derivatives of, A., 357.
- 4-Anilino-2-phenylquinoline, 6-chloro-*p*-chloro-, and its salts and derivatives, A., 357.
- 2-Anilinophenylstibinic acid, 5-nitro-, A., 876.
- γ -Anilino- α -piperidinobutane, and its picrate, A., 478.
- α -Anilino-propionic acid, *N*-nitroso-, and its derivatives, A., 1232.
- 2-Anilinopyridine, 5-nitro-, and its nitroso-derivative, A., 993.
- 4-Anilinopyridine, 3-amino-, 3-amino-*p*-amino-, acetyl derivative, 3-nitro-, and 3-nitro-*p*-amino-, and its acetyl derivative, A., 226.
- 1-Anilino-4-pyridone, 1-*p*-nitro-, *p*-nitrophenylhydrazone, A., 1378.
- 1-Anilino-4-pyridone-2-carboxylic acid, 1-*p*-nitro-, ethyl ester, *p*-nitrophenylhydrazone of, A., 1378.
- 1-Anilino-4-pyridone-2:6-dicarboxylic acid, 1-*p*-nitro-, and its ethyl ester, *p*-nitrophenylhydrazones, A., 1378.
- 1-Anilinoisquinoline chiodide, A., 224.
- Anilinosulphonmethanesulphonic acid, phenyl ester, A., 472.
- Anilinothiols, rearrangement of, A., 1120.
- 2-Anilino-3-*p*-hydroxyphenyl-4-(3':4'-dihydroxyphenyl)-2:3-thiazoline, 2-*p*-hydroxy-, A., 1511.
- 2-Anilino-4-keto-3-*p*-bromophenyl-5:5-dimethyltetrahydrothiazole, A., 1135.
- 2-Anilino-4-keto-3-*p*-bromophenyl-5:5-dimethyltetrahydrothiazole, 2-*p*-bromo-, and its hydrotribromide, A., 1136.
- 2-Anilino-4-keto-3-*op*-dibromophenyl-5:5-dimethyltetrahydrothiazole, 2-*p*-bromo-, A., 1136.

- 2-Anilo-4-keto-3-*p*-bromophenyl-5-methyltetrahydrothiazole, A., 1135.
 2-Anilo-4-keto-3-*p*-bromophenyl-5-methyltetrahydrothiazole, 2-*p*-bromo-, and its hydrotribromide, A., 1136.
 2-Anilo-4-keto-3-*op*-*di*bromophenyl-5-methyltetrahydrothiazole, 2-*p*-bromo-, A., 1136.
 2-Anilo-4-keto-3-phenyl-5:5-dimethyltetrahydrothiazole, and its hydrobromides, A., 1135.
 2-Anilo-4-keto-3-phenyl-5-methyltetrahydrothiazole, and its hydroperbromide, A., 1135.
 2-Anilo-3-phenyl- α -hydrindone, A., 1369.
 2-Anilo-3-phenyl-4-(3':4'-*di*hydroxyphenyl)-2:3-thiazoline, A., 1511.
 2-Anilotetrahydrothiazol-3-thioformanil, A., 1512.
 Animals, feeding of, with slaughterhouse blood, B., 522.
 poisoning of, by cyanides in industrial effluents, B., 1072.
 conservation of wastes from small-scale slaughter of, B., 522.
 farm, feeding of, with hydrolysis products of wood, B., 971.
 fresh-water, effect of narcosis on water and mineral tolerance in, A., 779.
 hibernating, respiratory quotients of, A., 387.
 marine, carotenoids in, A., 1145.
 lipochromes of, A., 882, 1265.
 oils from. See Oils, animal marine.
 edible extracts from, (P.), B., 827.
 production of meat extracts from, (P.), B., 605.
 invertebrate, biochemistry of, A., 377.
 reviving, action of heavy water on, A., 531.
 ruminant, digestibility of brown lucerne hay, sesame meal, and artichoke silage, for, B., 379.
 slaughterhouse, analysis of flesh and viscera of, A., 1396.
 in S. Africa, photosensitisation of, A., 383.
 Animal oils. See Oils, animal.
 Animal tissues. See under Tissues.
 Anions, complex, formation of, by trivalent elements, A., 1060.
 organic, mobilities of, A., 825.
 Anisaldehyde, ozonisation of, A., 1328.
 condensation of, with 4-methylcyclohexanone, A., 345.
o-Aniside, 4-chloro-, (P.), B., 585.
o-Anisidine, acyl derivatives, A., 1490.
o-Anisidine, 5-nitro-, manufacture of, (P.), B., 396.
m-Anisidine, 4-bromo-, and its hydrochloride, A., 1233.
β-*p*-Anisidinoaceto-*p*-aniside, A., 335.
 4-*p*-Anisidino-2-dodecyloxyanthraquinone, 1-amino-, manufacture of, (P.), B., 763.
 Anisole, fluidity of, A., 290.
 conductivity of tetra-alkylammonium salts in, A., 705.
 Anisole, 5-bromo-2-amino-, and -2-iodo-, 2-bromo-5-nitro-, and 5-chloro-2-iodo-, A., 1364.
 4-bromo-2-fluoro-, A., 856.
 4- and 6-bromo-3-hydroxy-, and 4-bromo-3-nitro-, A., 1233.
o-Anisole diazonium fluoride, 5-bromo-, A., 856.
 Anisotropic liquids, A., 565.
 theory of, A., 433.
 orienting action of electric fields on molecules of, A., 1305.
 elastic constants and molecular orientation of, A., 1062.
 Anisotropic liquids, conductivity of, A., 916.
 dielectric loss in, A., 1191.
 media, dielectric constant and magnetic permeability in, A., 1304.
 substances, examination of, in reflected light, A., 19.
 2-*p*-Anisoylbenzoic acid, and its methyl ester, A., 1372.
 γ -Anisoylbutyric acid, A., 961.
p-Anisoyl-4:5-dimethyl-4'-tetrahydrobenzoic acid, A., 1372.
p-Anisoylphenol, *o*-amino-, A., 1361.
 Anisyl 3-benzoate, 4- and 6-bromo-, A., 1233.
 4:6-*di*bromo-, A., 1234.
m-Anisyl β -diethylaminoethyl ether, (P.), B., 1132.
 Anisylallyl acetic acid, and its lactone, A., 618.
 Anisylallyl malonic acid, ethyl ester, A., 618.
 2-Anisylbenzopyranol, A., 1248.
 1-Anisyl-1:2:3-benzotriazole, 5-amino-, and 5-nitro-, A., 226.
p-Anisylcarbamic acid, cholesteryl ester, A., 209.
m-Anisylcarbamide, A., 1155.
 β -*o*-Anisyl- α -carboxyphenylpropionolactone, β -hydroxy-, and its methyl ester, A., 344.
o-Anisylidicyanamide, A., 482.
p-Anisylglyoxal, and its hydrate, A., 623.
p-Anisylcycloheptanone, and its semicarbazone, A., 1240.
p-Anisylcycloheptene, and its epoxide, A., 1240.
 ϵ -*p*-Anisylhexoic acid, A., 1236.
p-Anisylcyclohexyl-1-aldehyde, and its semicarbazone, A., 1240.
p-Anisylcyclohexyl-1-carboxylic acid, A., 1240.
p-Anisylidenecyclohexane, and its epoxide and iodohydrin, A., 1240.
 2-Anisylidene-4-methylcyclohexanone, and its derivatives, A., 345.
 Anisylmalonic acid, ethyl ester, A., 618.
 α -Anisylmethanesulphonic acid, α -amino-*p*-nitro-, and its acetyl derivative, potassium salt, A., 72.
s-*p*-Anisylphenylsuccinic acid, derivatives of, A., 213.
o- and *p*-Anisylpyridinium perchlorates, A., 1505.
 Anisylquinol, A., 87.
 Anisyltriazine, amiohydroxy-, and its salts, A., 1254.
 β -*p*-Anisyl- α -2:4:6-trimethoxyphenyl-lactic acid, A., 220.
 Ankerites, from Northumberland coalfields, A., 956.
 Anodes, influence of surface of, on anodic processes, A., 1079.
 Kunsmann, experiments with, A., 147.
 lead peroxide, production and use of, B., 681.
 mercury, passivation of, A., 936.
 nickel, manufacture of, (P.), B., 107.
 dissolving of, B., 1147.
 Anode effect, in electrolysis of melts, A., 942.
Anodonta, extrapallial liquid of, A., 648.
Anodonta cygnea, effect of cryoscopic depression of internal medium on blood and urine of, A., 1012.
Anolis carolinensis. See Lizards.
Anomala orientalis, control of, on sugar cane, B., 690.
 Anorthite from California, A., 726.
 Anorthosite, relation of, to granite, A., 602.
 Anoxæmia, respiration in, A., 371.
 effect of methylene blue on, A., 878.
 severe, effect of, on human kidney function, A., 1271.
 Anserine in mammalian skeletal muscle, A., 882.
 flavinate, A., 639.
 Ants, control of, on banked citrus trees, B., 1158.
Antestia, control of, with pyrethrum extract, on coffee, B., 516.
 Anthelmintics, A., 246, 529, 1159.
 tetrachloroethylene as, B., 823.
 liquid, manufacture of solutions of, (P.), B., 749.
 in vitro testing of, A., 395.
 Anthocyanidins, transformations of, A., 867.
 conversion of vegetable tannins into, B., 739.
 Anthocyanins, constitution of, A., 1377.
 in relation to assimilation of plants, A., 548.
 Anthracene, purification of, A., 204; B., 1129.
 separation of carbazole from, (P.), B., 894.
 concentration of, with furfuraldehyde, B., 12.
 ultra-violet absorption spectrum of, A., 913.
 crystal structure of, A., 286.
 hydrogenation of, A., 1116.
 destructive hydrogenation of, B., 708.
 with production of light aromatic oils, B., 1030.
 effect of electric field on photochemical polymerisation of, A., 590.
 photo-oxide of, A., 1488.
 Anthracene, 1:5-*di*bromo-2:6-*di*hydroxy-, and its dimethyl ether, A., 761.
 1:4-*di*hydroxy-, and its methyl and ethyl ethers, (P.), B., 762.
 Anthracene oil, injury of crops by, B., 472.
 winter treatment of fruit trees with emulsions of, B., 472.
 Anthracene series, A., 1235.
 reversible oxidation in, A., 1233.
 addition to conjugated compounds in, A., 1369.
 Anthracene-9:10-*di*sulphonic acid, and its sodium salt, A., 968.
 Anthracite, structure of peranthracite and, B., 611.
 domestic furnaces for, B., 932.
 gas-producer conversion of, B., 437.
 reactivity of, with carbon dioxide, B., 211.
 uses of, B., 932.
 treatment of, for use in filter plants for water, B., 1078.
 Rudarian, B., 5.
 Anthradiginone, phytochemical reduction of, A., 1165.
 Anthra-1:4:9:10-*di*quinone-8-carboxylic acid, hydroxy-, A., 347.
 Anthranilallyl amide, A., 365.
 Anthranilic acid, crystal structure of, A., 687.
 use of, for analysis of metals, A., 720.
 determination of, A., 639; B., 1036.
 determination of zinc with, A., 1473.
 Anthranols, addition reactions of, A., 1369.
 2-Anthranoyl-*p*-aminobenzoylacetanilide, 3-hydroxy-, (P.), B., 14.
 Anthraquinone, crystal structure of, A., 687.
 sulphonation of, A., 863.
 and its derivatives, (P.), B., 397.
 formation of benzanthrone by reaction of, with glycerol, A., 215.

- Anthraquinone derivatives**, production of, (P.), B., 93, 487.
 containing nitrogen and sulphur, manufacture of, (P.), B., 762.
 containing selenium, manufacture of, (P.), B., 763.
 isologues of, with triazole rings, A., 1508.
- Anthraquinone**, amino-derivatives, benzoyl derivatives, acid hydrolysis of, A., 623.
 amino-, halogenation of derivatives of, (P.), B., 1133.
 1-amino-derivatives, manufacture of, (P.), B., 141.
 2-amino-, production of, from anthraquinone-2-sulphonic acid, B., 138.
 $\beta\beta'$ -diamino-, manufacture of derivatives of, (P.), B., 263.
 1:4-diamino-, manufacture of NN' -disubstitution products of, (P.), B., 1134.
 1-amino-4-hydroxy-, sulphate, (P.), B., 219.
 and aminodihydroxy-, manufacture of, (P.), B., 219.
 4:8-diamino-1:5-dihydroxy-, and 4:5-diamino-1:8-dihydroxy-, (P.), B., 219.
 bromo-, chlorohydroxy-, and hydroxy-derivatives, and their derivatives, A., 219.
 2:6- and 2:7-dichloro-, (P.), B., 622.
 trichloro-, (P.), B., 622.
 3-chloro-2-amino-, 2-acetyl derivative, manufacture of, (P.), B., 487.
 4-chloro-1-amino-, 1-benzoyl derivative, production of, (P.), B., 349.
 1-cyano-derivatives, violet reduction products of, A., 93.
 α -hydroxy-, preparation and hydrolysis of glucosides of, A., 983.
 1:2:5:8-tetrahydroxy-, use of, in analysis, A., 1093.
- Anthraquinone dyes**, manufacture of, (P.), B., 95, 141, 763, 797, 895.
 production of intermediates for, (P.), B., 297.
 for acetate silk, production of, (P.), B., 141.
 for animal fibres, manufacture of, (P.), B., 140.
 acid, manufacture of, (P.), B., 95, 349, 941.
 for wool, (P.), B., 1086.
 green, for wool and acetate silk, manufacture of, (P.), B., 397.
 vat, manufacture of, (P.), B., 219, 397.
 water-soluble, manufacture of, (P.), B., 220.
- Anthraquinone dyes**, amino-, for acetate silk, manufacture of, (P.), B., 842.
- Anthraquinone series**, A., 495.
 diene synthesis in, A., 1372.
- Anthraquinoneacridone dyes**, manufacture of, (P.), B., 220.
- Anthraquinone-3-aldehyde**, 1-hydroxy-, A., 495.
- Anthraquinone- β -D-araboside**, 1-hydroxy-, A., 983.
- Anthraquinone-3-carbinol**, 1-hydroxy-, A., 495.
- Anthraquinone-2-carboxylic acid**, 1-chloro-, ethyl ester, A., 1132.
- Anthraquinone-6-carboxylic acid**, 1-nitro-, and its halides, production of, (P.), B., 1085.
- Anthraquinonecarboxylic acids**, 1-hydroxy-, and their acetyl derivatives and their chlorides, A., 495.
 di - and tri -hydroxy-, A., 347.
- Anthraquinone- β -D-glucoside**, 1-hydroxy-, A., 983.
- Anthraquinonesulphonic acid**, nitro-, purification of, (P.), B., 443.
- Anthraquinone-7-sulphonyl chloride**, 2-chloro-, A., 87.
- Anthraquinonetrisulphonic acids**, 1:4-diamino-, manufacture of, (P.), B., 94.
 1:2:2':1'-Anthraquinoneanthraquinone, 8:8'-dichloro- and 5:8:5':8'-tetrachloro-, manufacture of, (P.), B., 585.
- 1-Anthraquinonyl 2-acetoxy-1-naphthyl**, 6-bromo-2-hydroxy-1-naphthyl, and 4-hydroxy- m -tolyl sulphides, A., 1490.
 β -hydroxyethyl sulphoxide, and its acetyl derivative, A., 1490.
 selenocyanide, A., 1257.
 1-sulphino-6-bromo-2-naphthyl, 1-sulphino-2-naphthyl, and 3-sulphino- p -tolyl ethers, A., 1490.
- Anthraquinonyl-2-acetanilide**, and 1-chloro-, and 1-nitro-, A., 342.
- 1-Anthraquinonyl-2-acetoxy-1-naphthylsulphone**, A., 1490.
- 3:1-Anthraquinonylaminonaphthalomethylimide**, and its benzamido-derivatives, A., 758.
- py - C - β -Anthraquinonylamino-1:9-pyrimidineanthrone, A., 1254.
- 1'-Anthraquinonyl-6-bromo-2-hydroxy-1-naphthylsulphone**, and its acetyl derivative, A., 1490.
- β -Anthraquinonylcarbamic acid**, cholesteryl ester, A., 209.
- Anthraquinonyl-6-carbinol**, 1-hydroxy-, A., 495.
- 1-Anthraquinonyl- β -hydroxyethylsulphone**, and its acetyl derivative, A., 1490.
- 1'-Anthraquinonyl-2-hydroxy-1-naphthylsulphone**, A., 1490.
- 1-Anthraquinonyl-4-hydroxy- m -tolylsulphone**, and its methyl ether, A., 1490.
- 2- α -Anthraquinonyloxy-6-bromo-1-naphthyl disulphide**, A., 1490.
- 2- α -Anthraquinonyloxy-1-naphthyl disulphide**, A., 1490.
- Anthraquinonylselenazole**, A., 1258.
- 1-Anthraquinonylselenolacetic acid**, A., 1258.
- Anthrax**, killing of spores of, by mercuric chloride and silver nitrate, B., 700.
- 9-Anthrone**, bromo-, chloro-hydroxy-, and hydroxy-derivatives, and their acetyl derivatives, A., 217.
- Anthrones**, manufacture of condensation and substitution products of, (P.), B., 985.
- Anthronylacetic acid**, 1:5-dichloro-, A., 1235.
- Anthronylideneacetic acid**, A., 1235.
- Anthronylidenedipropionic acid**, A., 1235.
- β -9-Anthronyl- β - α - and - p -nitrophenylethane- $\alpha\alpha$ -dicarboxylic acids**, esters, A., 619.
- β -9-Anthronyl- β - m -nitrophenylethane- $\alpha\alpha$ -dicarboxylic acid**, esters, A., 212.
- β -Anthronyl- β - m -nitrophenylpropionic acid**, and 9-hydroxy-, and their derivatives, A., 212.
- β -9-Anthronyl- β - m - and - p -nitrophenylpropionic acids**, and their derivatives, A., 619.
- Anthronylpropionic acid**, dichloro-derivatives, A., 1235.
- Anti-abrin**, determination of, by flocculation, A., 1263.
- Antibodies**, production of, by injection of carbohydrates, glucosides, etc., A., 510.
 chemistry of, A., 256, 510.
 action of aldehydes on, A., 644.
 in animal tissues, effect of thymus extracts on, A., 644.
 anti-embryonic, preparation of, A., 644.
- Antibodies**, complement-fixing, effect of hyperpyrexia on, A., 1395.
- Anticathodes**, single-crystal, X-ray interference at, A., 1306.
- Anti-emetic preparations**, manufacture of, (P.), B., 573.
- Antifreezing mixtures**, (P.), B., 2, 706.
- Antigens**, A., 665.
 for complement fixation in amoebiasis, A., 1395.
 cholesterolised and lecithinised, preparation of, A., 1395.
 "complete" and "residual," in bacteria, A., 1168.
- Antiglyoxalase**, A., 122, 1279.
 kidney, A., 1026.
- Antigones**, incandescence of, A., 600.
- Antihormones**, A., 1034.
- Antimalarials**, A., 989, 1251, 1506.
 preparation of, A., 1017.
 production of, from 8-aminoquinoline derivatives, A., 500.
- Antimonic acid**. See under Antimony.
- Antimony**, recovery of, from copper ores, (P.), B., 414.
 absorption band spectrum of, and of its mixtures with bismuth, A., 555.
 X-ray emission spectrum of, A., 3.
 electrophoresis of, A., 823.
 sols, preparation of, A., 700.
 transition of, into vitreous amorphous state, A., 151.
 amorphous, A., 1194.
 molecular structure of, A., 919.
 d -isotomic, absorption spectrum of, A., 1438.
 $mono$ - and $poly$ -crystalline, thermal expansion of, A., 925.
 chemotherapy with, A., 657.
- Antimony alloys with cadmium**, A., 572.
 electrochemistry of, A., 936.
 with lead, use of, in storage batteries, B., 1001.
 determination in, of lead, B., 272, 501.
 with platinum, A., 440.
 with tin and zinc, A., 816.
- Antimony trihydride**, generation of, by storage batteries, B., 1001.
 iodide, equilibrium of, with ammonium iodide and water, A., 1077.
 with potassium iodide and water, A., 303.
 trioxide, pH of solutions of, A., 1203.
 sulphide, sols, mutual coagulation of ferric oxide sols and, A., 164.
 determination of, in ores and minerals, B., 1049.
- Antimonic acid**, solubility of, A., 292.
- Hexafluoroantimonic acid**, salts, A., 1213.
- Antimony organic compounds**, production of, (P.), B., 125.
 replacement of antimony in, by mercury, A., 506.
 with aniline and quinoline, A., 368.
 containing arsenic, manufacture of, (P.), B., 124.
 with selenium, (P.), B., 287.
- Antimony**, esters of thio-acids of, A., 1390.
 m -aminophenyl dichloride hydrochloride, and its derivatives, A., 368.
 cacodyl, synthesis of, A., 603.
- Antimony detection and determination**:-
 detection of, A., 464.
 microchemically, A., 838.
 in organic compounds, A., 1140.
 determination of, in alloys, B., 996.
 with permanganate, B., 808.
 spectrographically, in electrolytic copper, A., 1096.

- Antimony detection and determination**:—
determination of, electrically, in lead, B., 808.
in solder, B., 64.
volumetrically, in white metals, B., 64.
- Antimony electrodes**. See under **Electrodes**.
- Antimony ores**, Kadam-Dzbaï concentration of, B., 855.
- Antioxidants**, B., 563.
theory and use of, B., 1003.
production of, (P.), B., 841.
and fat-soluble vitamins in plant tissues, A., 130.
soya lecithin as, A., 43.
- Antipyretics**, sedative action of, A., 1156.
detection of, B., 332.
- Antipyrine**, synthesis of, A., 1132.
binary systems containing, A., 971.
equilibria of, with carbamide and urethane, A., 448.
with menthol and phenacetin, A., 1077.
with phenacetin and quinine, A., 448.
with phenacetin and salol, A., 970.
with phenacetin and sulphonal, A., 303.
with phenacetin and urethane, A., 704.
thermal analysis of mixtures of, with trichlorobutyl alcohol, A., 703.
compound of, with bismuth iodide, B., 123.
microchemistry of, A., 877.
- Antipyrine**, amino-, reaction of, with phenylhydrazine, A., 501.
- Antiseptics**, use of *B. bulgaricus* as standard for, B., 474.
esters of phenylethyl alcohol as, B., 572.
determination of bactericidal action of, by Allen method, B., 1163.
- Antisiphilics**, effect of, on reticulo-endothelial system, A., 531.
- Antithyroidal substance**, production of, (P.), B., 524.
- Antithyroidin**, increase of milk secretion by, A., 647.
- Antitoxic action and constitution of organic compounds**, A., 1020.
- Antitoxins**, in human sera, A., 644.
- Antivenen**, concentration of, A., 1144.
- Antivenoms**, stability of, A., 771.
- Antonov's rule**, validity of, A., 30.
- Antoxyproteic acid**, in urine, A., 1150.
- Antuitrin-S**, effect of, on blood, A., 1544.
action of, on male lizards, A., 1171.
- Anus platythyncha*. See **Ducks**.
- Anzia**, components of, A., 1366, 1367.
- Anzia acid**, and its methyl ester, A., 1366, 1367.
- Aorta**, calcification of, A., 1008.
human, arteriosclerosis in, A., 514.
- Apatite**, fluorescence spectrum of, in ultra-violet light, A., 681.
reaction of, with soda, B., 304.
determination in, of fluorine, A., 1336; B., 60.
- Apatite-nephelines**, Chibin, phosphoric acid and fluorine in, A., 61.
- Apes**, respiratory metabolism of, A., 777.
- Aphids**, Bordeaux-mixture-nicotine mixtures for control of, B., 869.
black, control of, on pecan trees, B., 74.
- Aphyllidine**, Hofmann degradation of, and its derivatives, A., 227.
reduction of, and bromo-, and their salts, A., 97.
- Apiole**, isolation of, as additive compound with bromine, A., 208.
toxicity of, A., 1533.
detection of, and its mercurimetric determination, A., 999.
- Apocynum*, pharmacology of, A., 117.
- Apocynum sibiricum*, culture of, B., 245.
- Apophyllite**, crystal structure of, A., 571.
- Aporphine alkaloids**, synthesis of ring-homologue of, A., 875.
- Apparatus**, filling of liquids into, through capillary tubes, A., 321.
- Apples**, growing of, in Tasmania, B., 166.
dates for picking of, B., 246.
changes in composition of, in development, A., 1548.
effect of nitrates on composition and cold storage keeping quality of, B., 1157.
physiology of, A., 131.
internal atmosphere of, A., 419.
boron content of, with "internal cork," A., 1436.
nitrogen metabolism of, A., 422.
viscosity of pectin from, B., 605.
peroxidase in darkening of, B., 604.
vitamins in, A., 414.
vitamin-C in, B., 172.
effect of, in diet on acid-base balance, A., 802.
effect of hydrogen cyanide on, B., 781.
substitutes for lead arsenate insecticides for, B., 74.
penetration, distribution, and effect of petroleum oils in, B., 168.
effects of sprays on quality of, B., 74.
removal of spray residues from, B., 1020.
bitterpit of, B., 822.
control of blue-mould decay of, B., 826.
control of larvæ of *Cacacia podana* on, B., 1013.
canker on, B., 1013.
control of corky-pit of, B., 691.
control of white leaf-hopper on, B., 969.
use of kerosene against maggot pupæ in, B., 327.
control of sawfly on, B., 1013.
control of sawfly and scab on, B., 247.
control of scab on, B., 246.
spray for, B., 118.
in the Hudson Valley, B., 647.
in Wisbech area, B., 472.
Bordeaux mixture-nicotine mixtures for, B., 869.
sulphur and arsenic sprays for, B., 118.
syrup from, (P.), B., 694.
control of thrips on, B., 1062.
production of juices, concentrates, and syrups from, B., 476.
storage of, B., 246, 572.
changes in, on storage, B., 826.
refrigeration of packages of, B., 826.
iodine-starch test for maturity of, B., 38.
Allington pippin and Newton Wonder, control of scab on, B., 869.
Bramley's seedling, carbon dioxide output and sugar and acid loss during storage of, A., 131.
Grimes Golden, physiology of, in storage, B., 826.
ripe, production of ethylene by, A., 265.
sour, Rumanian beverage from, B., 780.
Tasmanian, cool-storage scalds on, B., 747.
determination in, of arsenic and lead, B., 875.
- Apple juice**, clarification of, B., 824.
improvement of, by maceration with pomace, B., 250, 826.
canning of, B., 1066.
- Apple pomace**, extraction of pectin from, B., 1020.
- Apple pulp**, effect of sulphur dioxide on pectin in, B., 698.
- Apple trees**, fruiting relationships in, A., 1547.
relation of leaf area, soil moisture, and nitrogen, to fruit growth and fruit-bud formation on, B., 117.
- Apple trees**, composition of terminal shoots and fruits of, in relation to rootstock effects, A., 674.
effect of temperature on growth and metabolism of roots of, A., 1178.
nutrient requirements of, B., 117.
fertilisers for, B., 1011, 1157.
effect of nitrate fertilisers on, B., 422.
physiology of varieties of, A., 904.
starch polysaccharide from wood of, A., 1290.
accumulative effect of oil sprays on, B., 969.
immunity of, to woolly aphis attacks, A., 1436.
control of blossom weevil on, with derris dust, B., 1013.
decane ring-spot of leaves of, B., 919.
relation of carbohydrate-nitrogen nutrition of, to infection by *Erwinia amylovora*, A., 797.
Baldwin, fertiliser response of, on acid soils, B., 245.
winter injury of, B., 246.
Baldwin and Stayman, effect of temperature on growth and composition of, A., 419.
- Apricots**, salt injury in orchards of, in Tasmania, B., 1011.
oxidase in, A., 795.
- Apricot-seed cake**, manurial action of, B., 514.
- Aquamarine**, absorption and refraction of light by, A., 1100.
- Aquarium**, aëration and circulation of water in, A., 1219.
- Aqueous humour**. See under **Eyes**.
- Aquoflavin**, A., 235.
- Aquolumiflavin**, A., 235.
- Aquopentamminecobaltic salts**. See under **Cobalt**.
- Arabic acid**, and its sodium salt, osmotic pressure of solutions of, A., 294.
- l*-**Arabinal**, degradation of, to *l*-erythrose, A., 1354.
- Arabinamines**, oxalates of, A., 871.
- d*-**Arabino-3-ketoheptonic acid**, manufacture of, (P.), B., 443.
- l*-**Arabinomethylosediethylmercaptan**, A., 476.
- Arabinose**, rotatory dispersion of open-chain derivatives of, A., 809.
fermentation of, by butyric acid anaërobes, A., 1167.
identification of, A., 1224.
- Arabinose**, bromo-, *penta*acetate, A., 1354.
- d*-**Arabinose**, preparation of *d*-adonose from, A., 329.
- l*-**Arabinose ethyl mercaptal 2:3:4:5-tetraacetate 6-triphenylmethyl ether**, A., 735.
- Arabinose-ethylmercaptal**, 5-benzoyl derivative, and its phenylhydrazone, A., 1354.
- α*-**l**-**Arabinosides**, fission of, by almond emulsin, A., 1110.
- d*-**Arabitol pentaacetate**, A., 1351.
- 2-1'-Arabitylamino**benzenes, 1-nitro-, and their tetra-acetates, A., 871.
- 5-1'-Arabitylamino-*o*-xylene**, 4-nitro-, A., 761.
- 5-Arabitylamino-*o*-xylenes**, and their tetra-acetates, A., 1134.
- 9-1'-Araboisoalloxazine**, A., 359.
- 9-Arabo**flavins, synthetic, and their tetra-acetates, A., 871.
- Arabonic acid**, lead salt, A., 732.
- l*-**Arabonic acid**, barium salt, reaction of, with barium hydroxide, A., 327.
- Arachido- β -kephalin**, *diocetabromo*-, A., 228.
- Arachidonic acid**, and its determination, A., 195.
in butter-fat, A., 106.

- Arachis oil**, selectivity of hydrogenation of, B., 732.
 adulteration of, with coconut oil, B., 509.
 containing oleic acid, interfacial tension between sodium hydroxide solutions and, A., 1071.
- Arachnids**, guanine in excreta of, A., 1148.
- Aralkylarylcaboxylic acids**, production of, (P.), B., 940.
- Arbutus punctulata*. See Sea-urchins.
- Arbutus unedo*, carotenoids of fruits of, A., 1040.
- Architecture**, use of nickel alloys in, B., 1097.
 use of stainless steel and vitreous enamelled iron in, B., 1097.
- Arctium lappa*, utilisation of inulin from, by rats, A., 112.
- Arctostaphylos uva ursi*, Latvian, leaves of, B., 1022.
- Arecoline**, pharmacology of, A., 1156.
 effect of, on alkali reserve and blood-sugar, A., 641.
- Arenobufagin**, acetyl derivative, A., 1502.
- Arenobufaginic acid**, A., 1502.
- Arenobufagone**, A., 1502.
- Argentite**. See under Silver.
- Argentic salts**. See under Silver.
- Argentite**, relations of, to chalcocite and stromeyerite, A., 602.
- Arginase**, stability of, A., 405.
 activation of, A., 1026.
 pure, action of oxidising agents on, A., 404.
 in blood, effect of activators on, A., 1392.
 of embryonic tissues, effect of radium on, A., 1414.
 in hen's embryo, A., 659.
 in skeletal muscle, A., 1417.
 determination of, A., 784.
 microchemically, A., 1163.
 in invertebrates, A., 388.
- Arginine**, onzymic hydrolysis of, A., 405.
 fission of, in stomach, A., 1152.
 combination of, with fatty acids, A., 966.
 determination of, B., 764.
 liberated from proteins, A., 252.
- d-Arginine anhydride**, synthesis of, and its fission by pepsin, A., 965.
tetrahydrochloride, A., 965.
- Argon** in natural gases, A., 724.
 atoms, energy exchange of, with walls, A., 912.
 molecular refraction of, A., 13.
 discontinuities in spectrum of, A., 136.
 Zeeman splitting in spectrum of, A., 423.
 absorption spectrum of, A., 271.
 extreme ultra-violet spectra of, A., 1291.
 ultra-violet wave-length standards for, A., 799.
 Végard-Kaplan bands in mixtures of nitrogen and, A., 1045.
 elastic scattering of electrons in, A., 557.
 electrical clean-up of, at low pressures, A., 4.
 ionisation of, by X-rays, A., 273.
 by magnesium ions, A., 1294.
 energy of agitation of positive ions in, A., 274.
 critical potential of, A., 273.
 starting potential of glow discharge in mixtures of neon and, A., 1.
 Auger effect in, A., 273.
 Joule-Thomson effect in, A., 22.
 specific heat of, A., 690.
 melting parameter of, A., 156.
 liquid, viscosity of, A., 1064.
 solubility of, in aqueous salt solutions, A., 1067.
 detection of, spectroscopically, in mixtures with nitrogen, A., 54.
- Argyrol**, differentiation of collargol, electargol, protargol, and, in solution, B., 828.
- Aristolochia indica*, constituents of roots of, A., 1433.
- isoAristolochic acid*, and its derivatives, A., 1433.
- Aristolochine**, and its hydrochloride, A., 1433.
- Armadillos**, protein metabolism of, A., 1529.
- Aromatic compounds**, structure of nuclei in, A., 810.
 potential energy of nuclei of, A., 852.
 biocolorescence of, A., 458.
 prevention of discoloration of, (P.), B., 761.
 fluorination of, A., 203.
 hydrogenation of, B., 296.
 high-pressure hydrogenation of, B., 261.
 nitration and sulphonation of, A., 1113.
 substitution in, A., 74, 853.
 volume effect of alkyl groups in, A., 74.
 introduction of amino-group into, A., 223.
 arylated, A., 204, 213, 967.
 carboxylic, internal energy relations among, A., 73, 203.
 o-substituted, auto-ignition temperatures of, A., 41.
- 1-Aroylanthraquinones**, oximes of, isomerism of benzoylenemorphanthridone and, A., 869.
- o-Aroylbenzoic acids**, substituted, preparation of, A., 859.
- 1-Aroylallochrysoketones**, dehydration of oximes of, A., 992.
- m- and p-Arsanilic acids**. See Phenylarsinic acids, *m*- and *p*-amino-.
- Arsenamides**, A., 1139.
- Arsenates**. See under Arsenic.
- Arsenic**, at. wt. of, A., 801.
 isotopes of, A., 1295.
 occurrence of, in fish from polluted water, B., 875.
 in rocks of the Eastern Alps, A., 61.
 recovery of, from copper ores, (P.), B., 414.
 spectrum of, A., 2.
 Zeeman effect in, A., 271.
 absorption spectrum of, A., 136.
 K α -emission spectrum of, A., 1439.
 sols, preparation of, A., 700.
 in soils, A., 61.
 fixation of, by ovalbumin in presence of radon, A., 532.
 toxicity of protein complexes with, A., 532.
 habituation to, A., 399.
 effect of therapy with, on carbohydrate and nitrogen metabolism, A., 657.
 tervalent, stereochemistry of, A., 875, 1514.
- Arsenic alloys with lead**, A., 1314.
- Arsenic compounds**, effect of, on growth of fibroblast cultures, A., 1412.
 effect of, on trypanocidal titre of serum, A., 537.
- Arsenic trichloride**, preparation of, A., 715.
 and its mixtures, Raman effect in, A., 1189.
 Raman spectra of, in benzene and carbon tetrachloride, A., 1053.
 additive compounds of, A., 1090.
trifluoride, heat and free energy of formation of, A., 704.
monohydride, A., 945.
trihydride, vibration frequencies of, A., 685.
 infra-red spectrum of, A., 1300.
 decomposition of, by fibrous materials, A., 181.
- Arsenic trihydride**, poisoning by. See under Poisoning.
monoxide, band spectrum of, A., 9, 280.
- Arsenious acid**, physico-chemical properties of solutions of, A., 292.
- Arsenites**, oxidation of, by X-rays, A., 1469.
- Meta-arsenites**, analysis of mixtures of, with arsenates and with sulphites, A., 1336.
- Arsenic acid**, determination of, in presence of iron and phosphoric acid, A., 1472.
- Arsenates**, colour reaction of, A., 1337.
 analysis of mixtures of, with meta-arsenites, A., 1336.
 determination of, potentiometrically, A., 463.
 volumetrically, A., 184.
- Arsenic trisulphide**, preparation and analysis of, B., 671.
 heat production of, A., 448.
 colloidal, exchange adsorption of ions on, A., 1069.
 sols, mutual coagulation of ferric oxido sols and, A., 164.
- Arsenic organic compounds**, A., 227.
 replacement of arsenic in, by mercury, A., 506.
 therapy with, A., 1533.
 containing antimony, manufacture of, (P.), B., 124.
 with selenium, (P.), B., 287.
 amino-substituted, manufacture of, (P.), B., 830.
 cyclic polymethylene, A., 637.
 heterocyclic, A., 1515.
 determination of, in air, A., 101.
 Arsenic, esters of thio-acids of, A., 1390.
- Arsenic acids**, relation between acidity potentials and oxidation-reduction potentials of, A., 1079.
- Arsenic detection**, determination, and separation:—
 test for absence of, A., 596.
 analysis of tinctures of iron and, B., 429.
 detection of, A., 53.
 by Gutzeit test, zinc pellets for generation of hydrogen in, A., 1215.
 with kairin, A., 184.
 by the Marsh-Liebig method, A., 596.
 in presence of antimony, A., 836.
 in biological material, A., 554, 948.
 in organic compounds, A., 1140.
 detection and determination of, by Gutzeit and Beck-Merres methods, A., 53, 184.
 determination of, in small quantities, A., 718.
 colorimetrically, A., 948.
 in phosphorus-free solutions, A., 1092.
 by visual conductometric titration, A., 1092.
 volumetrically, A., 949.
 in air, A., 59.
 in expired air, A., 1022.
 in coal, B., 612.
 in electrolytic copper, spectrographically, A., 1096.
 in iron ores, soot, etc., A., 184.
 in wines, B., 1016.
- Arsenic ores**, Reichenstein, influence of roasting on gold yield from, B., 636.
- Arsenicals**, with furan nucleus, A., 997.
- Arsenides**, crystal structure of, A., 920.
- Arsenious trithiosalicylic acid**, action of, on tissue culture cells, A., 1161.
- 1,1'-Arsono-3,3'-diamino-4,4'-di- β -hydroxy-*n*-propoxybenzene**, A., 1389.

- Arsenobenzene**, avidity of new preparations of, A., 120.
Arsenobenzene, 2:2'-dichloro-5:5'-diamino-, A., 637.
 2:2'-dichloro-5:5'-dihydroxy-, A., 637.
Arsenobenzenes, analysis and toxicity tests on commercial samples of, B., 1023.
Arsenobis(trimethylene)arsinic acid, A., 333.
5:5'-Arsenocarbamylmethylbenzimidazole, A., 502.
5:5'-Arsenocarbonylmethylbenzimidazoles, A., 502.
Arsenolite, crystal structure of, A., 286.
1:1'-Arseno-3:3'-dinitro-4:4'-di- β -hydroxy-*n*-propoxybenzene, and its dinitrate, A., 1389.
Arsenopyridine derivatives, action of, on trypanosomes, A., 125.
Arsindole, ring closure of, A., 997.
Arsindole, 1-chloro-, A., 1515.
Arsine. See **Arsenic trihydride**.
Arsines, secondary and tertiary, hydroxy-salts of, A., 1138.
 tertiary tetravalent compounds of, with platinum, A., 368.
Arsines, dichloro-, preparation of, A., 997.
Arsinic acids, acridinium compounds of, (P.), B., 124.
 aliphatic, dissociation constants of, A., 446.
3-Arsinobenzenediazonium chloride, 4-chloro-, A., 637.
***o*-Arsinobenzoic acid**, A., 997.
4-Arsinophenoxyacetic acid, 2-nitro-, and its methyl ester, A., 99.
Arsinophenoxyethyl alcohol, and 2-amino-, 2-chloro-, and *mono*- and *dinitro*-, and their derivatives, A., 99.
 β -4-Arsinophenoxyethyl nitrate, 2-nitro-, A., 99.
 α -4-Arsinophenoxypropyl alcohol, α -2-amino-, and its derivatives, A., 1389.
 α -4-Arsinophenoxyisopropyl alcohol, α -2-nitro-, A., 1389.
 γ -4-Arsinophenoxypropyl alcohol, and 2-amino-, and 2-nitro-, and their salts, A., 100.
 α -4-Arsinophenoxyisopropyl nitrate, α -2-nitro-, A., 1389.
***o*-Arsinophenylacetic acid**, and its methyl ester, A., 997.
2-Arsinophenylglycine, 4-amino-, and 4-nitro-, A., 637.
 β -*o*-Arsinophenylpropionic acid, A., 997.
***p*-Arsinopimelanilic acid**, and *p*-dichloro-, A., 768.
***p*-Arsinosuberanilic acid**, and *p*-dichloro-, A., 768.
Arson, detection of fuels in cases of, B., 1123.
***p*-Arsonopimelanilic acid**, ethyl and methyl esters, and their sodium salts, A., 768.
***p*-Arsonosuberanilic acid**, and its ethyl and methyl esters, and their sodium salts, A., 767.
Artefacts, staining of, A., 772.
Artemisia, oils from, B., 333.
 Indian, crystalline constituents of, A., 268.
Artemisia brevifolia, cultivation of, A., 1290.
Artemisia rigida, oils of, B., 654.
Artemisic acid, A., 218.
Arteries, coronary, effect of low-caloric diets on metabolism in diseases of, A., 1403.
 visceral, metabolic effect of, clamping of, A., 1405.
Arteriosclerosis in human aorta, A., 514.
Arterx. See **Celotex**.
- Arthritis**, glutathione content of blood in, A., 381.
 characteristics of synovial fluid in, A., 381.
 antitrypsin in synovial fluid in, A., 885.
 inhibition of cartilage destruction by synovial fluid in, A., 885.
Arthropoda, reduction of silver salts by organs of, A., 378.
Artichokes, food value of stems and leaves of, B., 251.
 digestibility of lucerne hay, sesame meal, and silage of, B., 379.
 American, effect of soils and treatment on yields of tubers and sugar from, B., 868.
 Jerusalem, shortening rest period in tubers of, B., 326.
 production of alcohol from, B., 474.
Arundinaria hindsii. See **Kanzantiku**.
Arundo donax, alkaloids of, A., 634.
Aryl compounds, dichloroiodo-, action of magnesium phenyl bromide on, A., 1113.
 $\gamma\gamma$ -diethoxy-*n*-propyl ethers, A., 846.
 halides, hydrolysis of, (P.), B., 396.
 selenohalides, A., 1257.
 hydrolysis of, A., 1257.
 sulphides, production of mercury derivatives of, for use as bactericides, (P.), B., 1119.
Arylalkylamines, manufacture of, (P.), B., 218.
Arylalkylcarbamides, asymmetrical, A., 1488.
Arylalkyltriazines, aminothiols, conversion of, into aminohydroxy-derivatives, A., 1254.
Arylamides, fluorinated, production of, (P.), B., 1132.
Arylamines, production of, (P.), B., 183.
 reaction of, with butadiene, A., 205.
 α -Arylaminoanthraquinones, production of, (P.), B., 443.
Arylaminoarylamines, nitro-, manufacture of, (P.), B., 665.
 β -Arylaminoacetic acids, arylamides of, A., 335.
 α -Aryl- β -aminopropyl alcohols, synthesis of, A., 1362.
Arylarsinic acids, secondary, asymmetric, preparation of, A., 1514.
Arylarsinic acids, nitro-, catalytic reduction of, A., 1139.
Arylazonaphthylamines, chemistry of, A., 1489.
Arylazotriphenylmethanes, thermal fission of, A., 77.
Aryl-*p*-benzoquinones, synthesis of, and their relative oxidation potentials, A., 86.
Arylenediamines, tetrazotisation of, A., 742.
 β -Arylethylamines, formation of, from ω -nitrostyrenes, A., 1492.
 β -Arylglutamic acids, A., 1366.
Arylhexadienes, conjugated, synthesis and reactions of, A., 752.
Arylhydrazinoforinhydroxamic acids, derivatives of, A., 855.
 α -Aryl- β -hydroxylaminopropyl alcohols, synthesis of, A., 1362.
2-Arylimino-4-keto-3-aryl-5-methyltetrahydrothiazoles, and their homologues, bromination of, A., 1135.
Aryloxyperihydrofurananthroxyls, constitution of, A., 92.
 α -Arylpropanols, β -amino-, and β -hydroxyl-amino-, synthesis of, A., 972.
Arylperipyrrolinoanthranolazyls. See **Arylperipyrrolinoanthroxyls**.
- Arylperipyrrolinoanthroxyls**, constitution of, A., 93.
Arylselenenic acids, hydrolysis of, A., 1257.
Arylselenonium compounds, properties of, A., 875.
Arylstannonic acids, and their salts and hydrates, A., 967.
Arylsulphonium salts, ultra-violet absorption spectra of, A., 805.
Arylthiazoles, thiol-, production of, (P.), B., 762.
 reaction products of acid halides and, (P.), B., 140.
Arylthioglycolic acids, amino-, manufacture of, (P.), B., 183.
Aryltriazines, aminothiols, conversion of, into aminohydroxy-derivatives, A., 1254.
Aryltrimethylammonium chlorides, and their reduction by means of sodium amalgam, A., 76.
Asarone (allyl). See **2:4:5-Trimethoxy-1-allylbenzene**.
Asarum sieboldii. See **Hsi-hsin**.
Asbestos, B., 851.
 occurrence of, in Colorado, A., 60.
 purification of, (P.), B., 849.
 sizing of, (P.), B., 988.
 manufacture of coloured articles of, (P.), B., 102.
 diaphragms of, for electrolysis, B., 558.
 heat-insulating materials from, (P.), B., 896.
 moulded compositions from, (P.), B., 321, 903.
 yarns of rubber and, for friction materials, (P.), B., 1078.
 determination of cotton in mixtures with, B., 718.
Asbestos board, manufacture of, (P.), B., 579.
Asbestos sheets with cement, (P.), B., 308.
 felted, manufacture of, (P.), B., 988.
 waterproof, production of, (P.), B., 548.
Ascaris lumbricoides, effect of hydrogen peroxide and oxygenated terpeno hydrocarbons on, A., 246.
 anthelmintic action of phenols against, A., 1412.
Ascaris suilla, respiration of, A., 519.
Ascidia, carbon dioxide in internal medium of, A., 391.
Asclepias cornuti, composition of latex of, A., 1180.
Ascogaster carpocapsa, parasitism of codling-moths by, B., 742.
Ascorbic acid, A., 1106.
 constitution of, A., 72.
 tautomerism of, A., 1248.
 synthesis of, and its identity with vitamin-C, A., 846.
 absorption spectrum of, A., 1106.
 electrode potential of, A., 706.
 relation of, to methyl *D*-galacturonate, A., 732.
 catalytic oxidation of, A., 793.
 enzyme oxidising, A., 1023.
 influence of animal tissues on oxidation of, A., 546.
 as photographic developer, A., 712.
 and chlorophyll, A., 670.
 photodynamic action of flavins on, A., 670.
 in fruits, A., 670.
 content of, in plant juices, A., 1287.
 in Indian plants, A., 1036.
 effect of, on growth of plants, A., 1036.
 from Japanese green tea, antiscorbutic activity of, A., 793.
 biological synthesis of, A., 903.
 production of, by tissues, A., 131.
 content of, in the organism, A., 1546.
 fixation and elimination of, A., 1546.

- Ascorbic acid**, in adrenals after death, A., 1036.
control of, in adrenals and liver, A., 263.
in aqueous humour, A., 1546.
after administration of vitamin-C, A., 546.
in lens of eyes, A., 232.
on scorbutogenic diet, A., 546.
storage of, in the intestine, A., 669.
in pituitary, A., 793.
in tissues, variation of, A., 670.
in inanition, A., 1176.
of normal and tumour-bearing rats, A., 1401.
in growing tissues, A., 417.
in vitreous humour of ox eyes, A., 416.
biological activity of, A., 547.
effect of photodynamic oxidation on physiological action of, A., 669.
biochemical relations between glutathione and, A., 1286.
effect of, on adrenals and thyroid, A., 263.
on blood-catalase, A., 546, 1535.
on work of frog's heart, A., 1429.
in scurvy, A., 669.
on tumours, A., 236, 1526.
anti-thyrototoxic action of, A., 1423.
reduced and oxidised, in tissues following scorbutogenic feeding, A., 669.
detection of, A., 903.
effect of glutathione on, with silver nitrate, A., 1036.
determination of, A., 130, 547, 1483.
by titration, A., 1176.
volumetrically, A., 903.
in animal tissues, A., 793.
in brain, cerebrospinal fluid, and serum, A., 1036.
in urine, A., 262, 1430.
See also Vitamin-C.
- L-Ascorbic acid**, synthesis of, A., 66.
manufacture of, (P.), B., 701.
pharmacology of, A., 1020.
and its derivatives, in the organism, in relation to antiscorbutic activity, A., 1036.
effect of anaesthesia on urinary excretion of, A., 1429.
detection of, A., 130.
- L-alloAscorbic acid**, A., 1353.
- Ascorboferrin**, effect of, on tumours, A., 649.
- Ash**, mountain, vitamin-C in berries of, B., 171.
- Asparagine**, rôle of, in nitrogen metabolism of plants, A., 1547.
as stimulator of bacterial production of butyl alcohol, A., 1282.
effect of, on reducing power of fructose, A., 329.
- L-Asparagine**, effect of X-rays and ultra-violet light on, A., 178.
conductivity of aqueous solutions of, A., 584.
solubility of, in water, A., 695.
- Asparagus**, composition of, during growth and its canning, B., 821.
control of caterpillar on, B., 375.
- L-Asparagyl- α -glycine**, ethyl ester, A., 1416.
- Aspartic acid**, synthesis of, in liver, from fumaric acid, A., 1530.
- L-Aspartic acid**, effect of X-rays and ultra-violet light on, A., 178.
- Aspen**, destructive distillation of, B., 437.
- Aspen wood**, production of xylose syrup from, B., 1064.
- Aspergillus**, reaction of medium and activity of felts in, A., 1540.
effect of buffers on activity of, A., 255.
diastatic activity of, A., 1419.
formation of starch by, A., 1166.
- Aspergillus fischeri**, fat produced by, A., 255.
- Aspergillus flavus-oryzae**, production of lipolytic and depilating enzymes from, B., 686.
- Aspergillus niger**, physiological action of elements on growth of, A., 535.
growth and nitrogen assimilation of, A., 254.
effect of ammonium chloride on growth and acid production of, A., 1419.
formation of intermediate products in growth of, A., 1027.
influence of anti-oxidants, methylene blue, and 2:4-dinitrophenol on growth of, A., 255.
influence of calcium on growth of, in potassium-deficient medium, A., 255.
replacement of potassium in growth of, A., 1027.
mineral nutrition of, A., 1166.
utilisation of organic acids by, A., 1540.
relation of phosphorus in soil to that of mycelium of, A., 898.
potassium in metabolism of, A., 535.
acid production by, A., 661, 1027.
effect of mineral constituents of medium on, A., 406.
citric fermentation by, A., 662.
formation of fatty acids from glucose by, A., 1166.
formation of hydroxylamine from ammonium nitrate in cultures of, A., 1166.
action of alkaloids on invertase produced by, A., 898.
formation of oxalic acid by, A., 124.
respiratory pigment of, A., 662.
formation of sterols by, A., 1540.
sulphopeptidase of, A., 1166.
tyrosine from protein of, A., 124.
action of, on n - α -diols, A., 193.
determination of soil fertility with, A., 786.
- Aspergillus ochraceus**, fermentation product of, A., 619.
- Aspergillus terreus**, metabolic products of, A., 662.
- Asphalt**, microscopy of, B., 129.
production of, (P.), B., 10, 294.
from German crude petroleum, B., 392.
extraction of, from petroleum, B., 757.
from bituminous rocks, (P.), B., 180.
treatment of, (P.), B., 180, 260.
granulation of, (P.), B., 180.
effect of continued heating on, B., 885.
increasing throughput of stills for, B., 1028.
manufacture of solutions of, (P.), B., 891.
dispersion of, (P.), B., 1083.
aqueous dispersions of, (P.), B., 135.
dispersions of rubber and, (P.), B., 962.
hydrogenation of, B., 790.
fibrous web for impregnation with, (P.), B., 185.
B.S.I. specifications for cements from, 1080.
production of hydrocarbons from, B., 709.
mixtures of synthetic rubber and, for cable insulation, B., 773.
production of compositions of rubber and, (P.), B., 1083.
coating of paper with, (P.), B., 806.
artificial, stable, manufacture of, (P.), B., 1126.
floated, blisters in, B., 903.
Grozni, sulphur compounds in distillates of, B., 1029.
natural, colour of, B., 437.
- Asphalt**, petroleum, containing paraffins, B., 535.
apparatus for testing of, (P.), B., 538.
determination in, of paraffin, B., 1028.
- Asphalt emulsions**. See under Emulsions.
- Asphaltic products**, manufacture of, (P.), B., 214, 538.
- Asphyxia**, effect of, on frog's ventricle, A., 119.
- Aspirin**. See Acetylsalicylic acid.
- Aspongopus chinensis**, oily product from, B., 1164.
- Assimilation**. See under Plants.
- Association**, determination of, by fluidity method, A., 290.
validity of mass law for, A., 430.
and polarisability, A., 431.
- Astacene** from fish liver oils, A., 882.
- Astacin**, constitution of, A., 346.
- Astacus fluviatilis**. See Crayfish.
- Asters**, control of leaf rust on, B., 568.
- Asterubin**, A., 771.
synthesis of, A., 1004, 1356.
physiological action of, A., 1265.
- Asthma**, carbon monoxide in blood in, A., 774.
treatment of, with viosterol, A., 514.
- Astragalus sinicus**, nodule bacteria of, A., 536.
- Astrakhanite**, formation of, A., 600.
- Astronomy**, photographic plates for use in, B., 525.
- Astrophyllite**, composition of, A., 190.
- Asymmetric compounds**, synthesis of, by addition of bromine to ethylenic linkings, A., 480.
- Atebrin**, treatment of malaria with, A., 1149.
detection and determination of, in urine, A., 655.
- Atherosclerosis**, A., 649.
- Atmosphere**, oxygen bands in spectrum of, A., 136.
infra-red absorption of sunlight by, A., 806.
ultra-violet band spectrum and distribution of ozone in, A., 424.
extinction of ultra-violet and visible spectrum in, A., 424.
permeability of, to ultra-violet light, A., 561.
ionised layer of, A., 143.
counting and mobility of ions in, A., 466.
colloids in, A., 295.
ozone in, near Shanghai, A., 59.
equilibrium of, A., 8.
apparatus for measuring drying power of, A., 1098.
recovery of water from, (P.), B., 928.
corrosion of non-ferrous wire screens in, B., 855.
turbulent, wind structure and evaporation in, B., 1.
upper, luminescence of, A., 59.
hydrogen in, A., 1343.
- workroom**, removal of poisonous gases and dusts from, B., 430.
determination in, of carbon dioxide, B., 926.
of ozone, A., 1472.
of sulphur, B., 207.
- See also Air.
- Atoms**, Dirac's theory of, A., 560.
maximum valency and structure of, A., 1058.
structure and disintegration of, and artificial radioactivity, A., 142.
form factors for, A., 679.
nuclear moments of, A., 278.

- Atoms, nuclei, classification of, A., 8.**
 models of, A., 1051.
 masses of, A., 1297.
 synthesis of, and stellar radiation, A., 427.
 spherical symmetry of, A., 804.
 properties of constituents of, A., 278.
 periodic property of, A., 8.
 binding energy of, A., 804.
 hemi-alpha groups and energy of binding in, A., 8.
 layers of neutrons in, A., 142.
 quantum levels of neutrons in, A., 1187.
 field between α -particles and, A., 1443.
 generation of high voltages for study of, A., 58.
 variations of charge on, A., 804.
 potential barriers for, A., 804.
 forces of, A., 150.
 elementary particles and forces in, A., 143.
 radioactivity and synthesis of, A., 7.
 dipole and quadrupole radiation from, A., 1187.
 retardation of cathode rays by, A., 1292.
 stability limits of, A., 560.
 disintegration of, by cosmic rays, A., 143.
 detection of disintegration of, in photographic emulsions, A., 426.
 detection of disintegration products of, A., 1441.
 production of protons in disintegration of, A., 1441.
 γ -rays from artificial disintegration of, A., 141.
 transformations of, A., 910.
 and bi-neutrons, A., 1049.
 energy released in, A., 803.
 artificial transformations of, A., 276.
 exchange interaction between, A., 569.
 vector and linking "eigenfunction" methods for spin degeneracy of, A., 427.
 chemistry of, A., 277, 426.
 omission of γ -rays in reactions of, A., 276.
 light, α -particles in, A., 278.
 interaction of, A., 274.
 variation in K-resonating strength and atomic number of, A., 8.
 X-ray levels and constants of, A., 139.
 inelastic collisions of, A., 1050.
 collision of slow electrons with, A., 5.
 scattering of electrons by, A., 1047.
 wave functions of, A., 9, 912, 1187.
 wave mechanical calculation of properties of, A., 279.
 waves, spin, and constants of, A., 9.
 energy relations of, A., 143.
 energy of systems of, A., 1058.
 calculations of interaction and activation energies of, A., 15.
 influence of inner shells on interactions of, A., 15.
 interaction of, with solid surfaces, A., 1070.
 Planck quanta and field of force of, A., 144.
 forces and oscillation frequencies of, in lattices, A., 150.
 reactions of, A., 150.
 disintegration of, with rays from radium- $B + C$, A., 277.
 use of double ionisation chamber in investigation of, A., 803.
 adsorbed, wandering of, on surfaces of solids, A., 1448.
- Atoms, central field, multipole radiation and quantum selection rules for, A., 279.**
 heavy, disintegration of, by cosmic rays, A., 426.
 nuclei, cross-section of, for slow neutrons, A., 1296.
 light, nuclear structure of, A., 1298.
 masses of, A., 677.
 disintegration of, by neutrons, A., 277.
 radioactive. See Radioactive atoms.
 with almost closed shells, relative transition probabilities for, A., 1050.
 tetrahedral, A., 810.
 Thomas-Fermi, exchange in, A., 279, 432.
 ψ -Atoms, A., 61.
 and isotopic compounds, A., 1132.
 Atomic attraction-in absence of polarity, A., 810.
 Atomic constants and cosmic constants in the expanding universe, A., 278.
 Atomic number, relation between at. wt. and, A., 558.
 Atomic refraction. See under Refraction.
 Atomic volume. See under Volume.
 Atomic weight of arsenic, A., 801.
 of beryllium, A., 5.
 of cadmium, A., 802.
 of carbon, A., 425.
 of calcium, A., 802.
 of europium, A., 425.
 of fluorine, A., 425.
 of gallium, A., 802.
 of hafnium, A., 802.
 of hydrogen, A., 590.
 of indium, A., 802.
 of iron, A., 802.
 of radiogenic lead, A., 558.
 of nickel, A., 802.
 of nitrogen, A., 425.
 of protoactinium, A., 5.
 of radium, A., 140.
 of rhodium, A., 802.
 of silver, A., 802.
 of tantalum, A., 140.
 of tellurium, A., 801.
 of terbium, A., 909.
 of titanium, A., 802.
 of zirconium, A., 802.
 Atomic weights, report on, A., 909.
 relation between at. number and, A., 558.
 international, practical and rational, A., 558.
 Atophan (2-phenylquinoline-4-carboxylic acid), β -bromoallyl ester, and its hydrochloride, production of, (P.), B., 750.
 elimination of uric acid from liver by, A., 528.
 toxicity of, A., 396.
 determination of, in presence of salicylic and acetylsalicylic acids, A., 990.
 Atoxyl, action of, *in vitro*, A., 1542.
 Atractyligenin, A., 495.
 halogenated derivatives of, A., 495.
 Atropic acid, *p*-hydroxylamino-, and *p*-nitroso-, A., 1489.
 Atropine, medicants from, B., 748.
 methobromide, stability of solutions of, B., 1022.
 sulphate, testing of, B., 205.
 action of, and of *d*- and *l*-hyoscyamine on children, A., 119.
 tolerance of, by children, A., 119.
 detection of, in presence of phenol, A., 229.
 determination of, in brain tissue, A., 1018.
 Auditory centres, effect of functional changes in, on proteolysis, A., 1534.
- Auger effect, A., 560.**
 and its influence on X-ray spectra, A., 273.
 and forbidden transitions, A., 801.
 Augite, pneumatolytic, from lava of Vesuvius, A., 601.
 Auramine dyes, production of, (P.), B., 397.
 Auropyrrole-black, A., 355.
 Aurora, spectrum of, A., 3, 138.
 "Aurosirid," from Russian platinum ores, A., 190.
 Aurothiomalic acid, sodium salt, manufacture of, (P.), B., 287.
 Austenite, structure of, in steel, A., 1060.
 grain growth in, B., 549.
 effect of thermal stresses on, B., 151.
 transformation of, A., 1066; B., 271, 593.
 effect of temperature on, B., 1145.
 into martensite, X-ray study of, B., 151.
 in alloy steel, B., 854.
 in chromium steel, B., 359.
 Austinite from Gold Hill, Utah, A., 726.
 Automobiles, lubricating oils for chassis of, (P.), B., 181.
 chromium- and nickel-plating of parts of, B., 233.
 Autoxidation, A., 494.
 Auxins, A., 1039.
 pea test for, A., 131.
 Auxinglutaric acid, synthesis of, and its isomerides, A., 1351.
 Avaram, manufacture of tanning extracts from bark of, B., 35.
 Avena coleoptiles, phototropism of, A., 418.
 Avena sativa, influence of temperature on development of, A., 1288.
 phototropic sensitivity of coleoptiles of, A., 548.
 Avertin, effect of, on liver function, A., 394.
 Avertin narcosis. See under Narcosis.
 Avional, notched-bar impact strength of, B., 771.
 Avitaminosis, efficiency of enzymes in, A., 415.
 in plants, A., 132.
 in rats caused by lack of skin factors in diet, A., 1035.
 Avitaminosis-A, histology of, A., 1174.
 anti-embryonic sensitizer in, A., 1275.
 oxygen consumption of rats in, and when fed with carotene, A., 1427.
 Avitaminosis-B, oxidation of lactic acid and of sugar in, A., 130.
 Avitaminosis-B₁, tissue respiration in, A., 1035.
 Avitaminosis-C, corpus luteum formation in, A., 1527.
 Avitaminosis-E, paresis in rats with, A., 548.
 Avocado, maturity of, B., 427.
 Avocado trees, effect of chlorides in soils on, B., 373.
 "Awobana," pigment of, A., 1290.
 Azafirin derivatives, A., 612.
 Azafrinal-I methyl ester, and its derivatives, A., 611.
 Azafrinal-II methyl ester, and its oxime, A., 612.
 Azafrinone amide, A., 611.
 Azanthraquinone, and its 6-bromo- and *ms*-chloro-derivatives, manufacture of, (P.), B., 585.
 Azarigenin, degradation of, with α -allocholanolic acid, A., 342.
 Azelaic acid, ethylene and polymethylone esters, A., 845.
 Azelic acid, *p*-nitrobenzyl ester, A., 81.
 Azeotropic mixtures, latent heat of vaporisation of, A., 817.

Azeotropic mixtures, distillation of, A., 927.
determination of degree of purity of, A., 321.

Azeotropism, and polymerisation and solvation, A., 157.
without the Bancroft point, A., 157.

*cyclo*Azi-*tetra*- and *-penta*-bromobenztriazones, nitroso-, A., 1231.

*cyclo*Azipentachlorobenztriazone, nitroso-, A., 1231.

Azides, A., 207, 998, 1117.
Raman spectra of, A., 11, 145.
potential of, A., 305.
organic, reaction of, with aromatic thio-ketones, A., 742.
detection of, in electron-discharge tubes, A., 1472.

Azido-groups, conversion of, into amino-groups, A., 742.

4(-)-Azidopropionic acid, phenyl ester and anilide of, A., 850.

Azidothiocarbonic acid, A., 72.

Azidoquinhydrones, A., 1243.

Azimidobenzene. See Benztriazolo.

Azine dyes, manufacture of, (P.), B., 1134.

Azlacones from *o*-nitrobenzaldehyde, alkaline hydrolysis of, A., 1385.

Azoacetoacetic acids, aryl esters, reaction of, with chlorine, bromine and iodine chlorides, A., 206.

Azoaldehydes, A., 1239.

Azoanthranilic acid, manufacture of, (P.), B., 140.

Azobenzene, amino-, analysis of, B., 137.
2:2'-diamino-5:5'-dihydroxy-, 2:2':5:5'-tetra-acetyl derivative, A., 1508.
3-bromo-2:4'-dinitro-4-hydroxy-, A., 613.
4-hydroxy-, derivatives of, A., 614.

p-Azobenzene carbamic acid, cholesteryl ester, A., 210.

5'-Azobenzene-4:3'-dimethyl-3:4'-di-(β -carbomethoxyethyl)pyrromethene, 5-hydroxy-, hydrochloride, A., 995.

5'-Azobenzene-3:3'- and 4:3'-dimethyl-3-ethyl-4'- β -carbomethoxyethylpyrromethenes, 5-hydroxy-, hydrochlorides, A., 994.

Azobenzene-4'-sulphonamide, 2-amino-4-hydroxy-, and its hydrochloride, (P.), B., 829.

Azobenzene-4'-sulphondimethylamide, 3-nitro-4-amino-, and 3-amino-4-hydroxy-, manufacture of, (P.), B., 829.

Azobilirubin, light extinction curves of, A., 1290.

Azochloroamide, manufacture of, (P.), B., 1165.
bactericidal action of, A., 900.

Azochromophores, A., 207.

Azo-compounds, bactericidal, manufacture of, (P.), B., 829.
complex, formation of, A., 1119.

Azo-compounds, hydroxy-, constitution of, A., 613.
reaction of, with magnesium organic compounds, A., 743.

Azodicarbonamidine, *NN'*-dichloro-. See Azochloroamide.

Azo-dyes, A., 1360.
manufacture of, (P.), B., 14, 94, 141, 797, 841, 842.
and their intermediates, (P.), B., 717, 985.
from carbazoles, (P.), B., 94.
from 6:13-dihydroxy- $\alpha\beta\beta'$ -dinaphthazines, (P.), B., 219.
production of water-soluble intermediates for, (P.), B., 894.
substitution of diazo-compounds in, B., 1037.
on the fibre, action of kier-boiling on, B., 988.

Azo-dyes, fastness of, on cotton, relative to soaping after-treatment, B., 945.
anticoagulant action of, in blood coagulation, A., 104.
fate of, in the organism, A., 119.
for acetate silk, production of, (P.), B., 220, 397, 796, 1036.
for leather, manufacture of, (P.), B., 14, 349, 717, 895, 941.
for pigments, manufacture of, (P.), B., 763, 941.
for lacquers, waxes, etc., manufacture of, (P.), B., 1086.
for rubber, production of, (P.), B., 397.
for wool, manufacture of, (P.), B., 94, 717.
chromable, manufacture of, (P.), B., 895, 1037.
chromiferous, manufacture of, (P.), B., 14, 220, 444, 717, 941, 985, 1086, 1134.
containing copper, manufacture of, (P.), B., 763, 842, 1134.
from dinitroaniline, indicator properties of, A., 315.
direct, manufacture of, (P.), B., 94.
fat-soluble, preparation of, A., 969, 1232.
green, chromable, manufacture of, (P.), B., 717.
insoluble, manufacture of, (P.), B., 220, 264, 349, 763.
on the fibre, (P.), B., 224.
insoluble in water, manufacture of, (P.), B., 797.
containing metals, manufacture of, (P.), B., 1134.
containing metal complexes, manufacture of, (P.), B., 220.
mordant, manufacture of, (P.), B., 1086.
oil-soluble, manufacture of, (P.), B., 895.
substantive, manufacture of, (P.), B., 15.
sulplide analogues, with bactericidal properties, A., 1360.
yellow, manufacture of, (P.), B., 941.
direct yellow, manufacture of, (P.), B., 762.

Azo-dyes, amino-, fastness of, to washing, B., 800.
o-hydroxy-, manufacture of metal compounds of, (P.), B., 14.
peri-hydroxy-, absorption spectra of, A., 207.

1:4-endoAzocyclohexane, synthesis of, A., 1133.

Azohydroxamic acids, A., 855.

Azoimide, molecular structure of, A., 1193.
heat of formation of, A., 1204.
mercury-sensitised decomposition of, A., 311.
reduction of, with naphthaquinone, A., 1243.
possible interference of, in iodometry, A., 1214.

Azomethane, structure of, A., 687.
photolysis of, A., 1468.
explosion of, A., 452.

2:2'-Azo-5:6:7:8:5':6':7':8'-octahydronaphthalene, A., 482.

Azoproteins, A., 1140.
serological studies of, A., 881.

Azotemia in acute nephritis, A., 1400.

Azotobacter, propagation of, in decomposition of plant residues, B., 690.
action of ultra-violet light on, A., 537.
effect of ultra-violet light on physiological activity of, A., 1167, 1420.
carbonaceous nutrition of, by higher plants, B., 1109.
nitrogen fixation by, A., 787, 1167.
synthesis of proteins by, A., 1028.
in soils, B., 918.
occurrence of, in South Australian soils, B., 820.

Azotobacter chroococcum, influence of single heavy application of fertilisers and soil composition on, B., 967.
nitrous products in cultures of, A., 1420.
origin of pigment in, A., 256.

m-Azotoluene, crystal structure of, A., 152, 921.

3:3'-Azotoluene, *NN'*-dinitro-1:1'-diamino-, (P.), B., 1132.

Azoximes, structure of, A., 810.
dipole moments of, A., 684.

p-Azoxyanisole, elasticity constant of, A., 1062.
effect of magnetic field on viscosity of, A., 1198.
isotropic electric birefringence of, A., 568.

Azoxybenzene derivatives, stereoisomerism of, A., 1489.

Azoxybenzenes, *p*-amino-, and their acetyl derivatives, A., 337.

Azoxybenzene-3:3'-disazo-*p*-hydroxynaphthoic anilide, B., 988.

2:2'-Azoxy-5:6:7:8:5':6':7':8'-octahydronaphthalene, A., 482.

p-Azoxyphenetole, refractive indices of, A., 431.

5:3'-Azoxy pyridine, 2:6'-dichloro-, A., 498.

3-Azoxy-5-pyridylpyrazole, 4-nitro-, A., 760.

Azulene, A., 853.

B.

BCG, culture of, by freezing, A., 899.
serological analysis of lipid fractions of, A., 1028.

Babbitt metal, bonding strength of, to steel and bronze, B., 152.
wearing properties of, B., 65.

Bacilli, anthrax, specific polysaccharide from, A., 126.
of the *coli-aerogenes* group in milk, A., 407.
diphtheria, A., 1168.
relation between electrophoresis, virulence, and types of, A., 1542.
chemistry of, A., 1028.
pigment elaborated by, A., 408.
influenza, cultivation of, A., 1542.
effect of quinol and vitamin-C on, A., 1542.

leprosy, fixation of methylene-blue by, A., 1283.

paratubercle and tubercle, toxicities of acetic and sulphuric acids towards *Streptothrix* and, A., 537.

paratyphoid, differentiation of, by means of sodium nitroprusside, A., 536.

paratyphoid and typhoid, examination of butter for, A., 663.
isolation of, from water, A., 786.
action of sodium tetrathionate on, A., 786.

pneumonia, soluble toxin from, A., 665.

Stéfanský's, resistance of, to ultra-violet light, A., 1283.

tubercle, A., 407.
culture media for, A., 408.
inhibition of growth of, by sulphur, A., 407.
chemistry of, A., 1169.
reduction of methylene blue by, A., 1028.
action of dilute heavy water on, A., 1170.
activation of, by acetone extracts of Koch's bacilli, A., 256.
lipoid hapten of extracts of, A., 1169.
effect of *p_H* on lysis of, by nucleic acids, A., 664.

- Bacilli*, tubercle, effect of antiseptics on viability of, A., 788.
 effect of vitamin-C on resistance to, A., 1270.
 antigenic fixatives of, A., 256, 1395, 1542.
 precipitins for fractions of *S* and *R* forms of, A., 1170.
 bovine and human, composition of, A., 126.
 heat-killed, chemistry of lipid hapten from, A., 899.
 human, acid wax and fatty acids from, A., 407.
 fluorescent pigment from, A., 1028.
 mammalian, toxicity of acetic and sulphuric acids for, A., 256.
 typhoid, medium favourable to growth of, A., 786.
 fission of complex ferrocyanides by, A., 536.
 vitality of, in butter, A., 1168.
 action of gastric juice on, A., 1030.
 typhus, preparation and properties of endotoxin of, A., 256.
Bacillus acidophilus, medium for growth of, (P.), B., 1113.
Bacillus ætrycke, utilisation of antigen by, A., 899.
 dehydrogenase of *R* and *S* forms of, A., 1541.
 enzyme in, which cleaves "complete" antigen, A., 787.
 specific substances in, A., 665.
Bacillus anthracis, preparation of vaccine of, (P.), B., 1166.
Bacillus bulgaricus, use of, for standardisation of antiseptics, B., 474.
Bacillus cellulosa dissolvens, destruction of cellulose by, A., 1167.
Bacillus coli, growth of, on alanine, A., 1169.
 culture media for, in water, B., 1071.
 oxidation of acetoacetic and pyruvic acids produced by, A., 663.
 fermentation of glucose by, A., 1282.
 formation of hydrogen in fermentation by, A., 1541.
 indole formation of, A., 663.
 sterol content of, A., 663.
 substance inhibiting fermentation from, A., 787.
 "resting," formation of hydrogen from glucose and formic acid by, A., 1028.
 tryptophan-indole reaction with, A., 1163.
Bacillus coli aërogenes, media for isolation of, from water, B., 1071.
Bacillus coli communis, dehydrogenase activity of, on higher aliphatic acids, A., 255.
Bacillus dysenteriae, formation of Forssman antigen by, A., 1030.
Bacillus gaertner, specific substances in, A., 665.
 enzyme in, cleaving "complete" antigen, A., 787.
Bacillus gallinarum, action of, on milk-media and on neutral-red, A., 664.
Bacillus lombardo pellegrini, carotenoids of, A., 663.
Bacillus macerans and *omelianski*, decomposition of cellulose by, A., 898.
Bacillus mycoides, effect of, on ammonification in soils, B., 687.
Bacillus perfringens, histochemistry of pigments of, A., 256.
Bacillus prodigiosus, antagonistic action of sterile broth of, A., 1030.
Bacillus proteus, toxin of, A., 255.
 resting, oxidation of amino-acids by, A., 1028.
Bacillus pullorum, agglutination of, A., 1520.
 action of, on milk-media and on neutral-red, A., 664.
Bacillus pyocyaneus, effect of glucose and mineral elements on growth of, A., 1540.
 fermentation of chondroitinsulphuric acid by, A., 111.
Bacillus radicola, action of alkaloids on cultures of, A., 1031.
Bacillus tuberculosis, culture of, by freezing, A., 899.
 residual antigens of, A., 1169.
Bacillus tumefaciens, A., 1029.
 synthetic media for, A., 409.
Bacillus typhosus, longevity of, in sewage sludge, B., 208.
 antibodies against variants of, A., 1030.
Bacillus violaceus, pigment of, A., 899.
Bacillus zylinum, cultures of, in lactic acid, A., 255.
 Bacteria, culture of, A., 1168.
 cultural requirements of, A., 1170.
 colloidal culture media for, A., 1419.
 growth of, with p_H control, A., 1282.
 in organic acid media, A., 536.
 in organic salt solutions, in relation to p_H and structure, A., 1282.
 action of formaldehyde and of colloidal silver on, A., 1031.
 influence of quinoline derivatives on, A., 537.
 counting of, by means of a photo-cell, A., 126.
 soluble dry filter for, in air, A., 1542.
 size of populations of, A., 662.
 photometry of multiplication of, A., 535.
 distribution of protozoa in filters for, B., 256.
 catalase of filtrates of, after lysis, A., 257.
 respiration of, A., 1541.
 physiology of respiration of, A., 1029.
 behaviour of, in ultra-violet light, A., 1030.
 action of X-rays on, A., 1170.
 action of soft X-rays on, A., 537.
 increase of volume of, following irradiation, A., 1028.
 reduction potentials of suspensions of, A., 788.
 electrophoresis of, A., 1321.
 heat-resistance of, B., 521.
 permeability of paper to, B., 720.
 manufacture of solutions of, (P.), B., 524.
 sensitivity of, and of bacteriophage to oxidation, A., 1170.
 effect of chlorine on, A., 788.
 oligodynamic action of elements on, A., 1421.
 agglutination of, by lemon juice, A., 257.
 prozone phenomena in, A., 1169.
 action of therapeutics on, A., 900.
 relation of potential and charge of, to their agglutination, A., 408.
 recovery of agglutinins in fixation of antibodies on, A., 665.
 "complete" and "residual" antigens in, A., 1168.
 antigenic differences between related strains of, A., 1420.
 composition of ash of, and its virulence, A., 787.
 enzymes of, in relation to metabolism, A., 256.
 enzyme formation and polysaccharide synthesis by, A., 1410.
 transformation of flavins by, A., 255.
 synergic gas production by, A., 1167.
 Bacteria, fermentation of α -methylglucoside by, A., 1169.
 oxidation of oils by, B., 1032.
 decomposition of organic matter in sea water by, A., 1169.
 pigment formation by, A., 899.
 decomposition of polyuronides by, A., 254.
 sterol content of, A., 407.
 influence of nutritive conditions on acid-fastness of, A., 408.
 resistance of, to germicides, A., 1421.
 metabolism by, A., 1029.
 influence of cations on viability of, A., 256.
 relation between colloidal condition of proteins and death point of, A., 409.
 staining of, with potassium permanganate, A., 257.
 negative stains for, A., 788.
 on fresh fruit, A., 1281.
 causing galls on plants, A., 798.
 in soils, B., 1059.
 of microflora of soils, B., 740.
 in wind-blown soils, B., 470.
 acetic, physiology of, A., 1029.
 fermentation of galactose by, A., 125.
 oxidation by, A., 1541.
 production of vitamin-C by yeast and, A., 670.
 acetic and oxidising, classification of, A., 255.
 acetone, respiration of, A., 407, 1541.
 acid, in the mouth, A., 1420.
 acid-fast, carotenoids of, A., 663.
 phosphatides of, A., 1282.
 acid-forming, in pyorrhea, A., 664.
 of aërogenes and colon groups, fermentation of rare sugars by, A., 786.
 anaërobic, B., 476.
 culture of, in media with added embryonic cells, A., 1282.
 metabolism of, A., 537, 664.
 butyl alcohol, stimulation of action of, by asparagine, A., 1282.
 cellulose-decomposing, A., 898.
 chitinivorous, A., 1167.
coli-aërogenes group, tests for, A., 786.
 coliform, on green fodder, action of acids on, A., 536.
 colon-typhoid-dysentery and soft rot, A., 786.
 crown-gall and hairy-root, metabolism of, A., 798.
 diastase-forming, A., 664.
 heat-resistant, in milk, B., 1066.
 intestinal, ζ -potential and suspension stability in, A., 1030.
 rate of disappearance of, in water, A., 1283.
 survival and death of, in sea water, A., 1419.
 action of, on asculin-gelatin, A., 1028.
 on vitamin-C, A., 1541.
 lactic, vitamin and nitrogenous requirements of, A., 899.
 action of dinitrophenols on respiration of, A., 253.
 as possible source of vitamin-B, A., 903.
 assay of preparations of, A., 898.
 luminous, reduction by, in presence of agents affecting oxidation, A., 1419.
 marine, A., 406.
 nitrogen-fixing, A., 1167, 1420.
 in Paris mud, A., 899.
 in soils, B., 514, 918.
 in water supplies, B., 527.
 non-symbiotic, fixation of atmospheric nitrogen by, B., 1009.

- Bacteria**, pathogenic, respiration and fermentation of, A., 899.
sterilisation of cultures of, by sunoxol, A., 537.
chemotherapy of infections due to, A., 1542.
propionic, physiological characteristics of, A., 255.
purple, constitution of colouring matter of, A., 362.
respiratory, A., 125.
root-nodule, B., 164.
pantothenic acid in, A., 1167.
of leguminous plants, A., 787.
soil, salt selection of, B., 324.
sulphur, A., 125.
from thermal springs of Santa Rosalia, Mexico, A., 1281.
sulphur red, carbon dioxide assimilation by, A., 1167.
sulphur purple, metabolism of, A., 406.
urea-splitting, in the sea, A., 664.
determination of volatile acids in cultures of, A., 1541.
- Bactericides**, (P.), B., 200, 333, 375, 743*, 1165.
manufacture of, (P.), B., 46, 206, 749, 782, 841, 925*, 974, 1119.
azo-compounds for use as, (P.), B., 829.
bismuth compounds for use as, (P.), B., 701.
for coating compositions, (P.), B., 466.
for water, etc., (P.), B., 1120.
- Bacteriochlorin trimethyl ester**, A., 362.
- Bacteriology of canning**, B., 521, 827, 1162.
- Bacteriolysis**, buffering power of culture fluids during, A., 1542.
transmissible, action of fermentation inhibitors on, A., 1542.
peroxidase in, A., 1542.
- Bacteriomethylphosphoride α** , A., 362.
- Bacteriophage**, nature of, A., 665.
preparation of, A., 1542.
centrifuging of, A., 409.
inactivation of, by oxidation, A., 1170.
inactivation and reactivation of, A., 1283.
metabolism and enzymic character of, A., 665.
effect of manganous salts on action of, A., 1542.
action of mercury-lamp rays on, A., 1542.
microbial agglutination by, A., 537.
- Bacterium propionicum**, activator of, metabolism of, A., 1029.
- Bäckströmite**, A., 1346.
- Bæomyces roseus**, constituents of, A., 1432.
- Bæomyces acid**, A., 1432.
- Baeyer, Adolf von**, 1835—1917, A., 1477.
- Bagasse**, A., 1239; B., 184, 1039.
utilisation of, B., 95, 221, 540.
recovery of cellulose from, by nitric acid process, B., 586.
manufacture of celotex from, B., 666.
lignin from. See under Lignin.
calorimetric value of, B., 1062.
determination in, of sucrose, B., 514.
of sugar, B., 328.
- Bagasse board**, drying of, B., 95.
- Bagilumbang**. See *Aleurites trisperma*.
- Baicalinase**, A., 1024.
- Bakelite**, thermal breakdown of insulators of, B., 1148.
manufacture of odourless products of, B., 69.
gluing of wood with, B., 852.
- Bakelite materials**, electrical properties of, B., 957.
- Bakery products**, manufacture of fats for shortening of, (P.), B., 365.
- Bakery products**, for diabetics, manufacture of, (P.), B., 1116.
containing sugar, manufacture of, (P.), B., 522.
- Baking**, (P.), B., 972.
ovens for, (P.), B., 578.
emulsion for use in, B., 732.
leavening agent for, (P.), B., 122.
action of salt, potassium bromate, and ammonium persulphate in, B., 42.
in Canada and America, B., 171.
- Baking agents**, (P.), B., 700.
preparation of, from starch, (P.), B., 1116.
- Baking powder**, manufacture of, (P.), B., 429.
dark specks in products from, B., 285.
determination in, of carbon dioxide, B., 947.
- Baking tests**, effect of hand and machine manipulation in, B., 426.
A.A.C.C., diastatic supplements for, B., 651.
cake, milk powder for, B., 651.
cake-, egg-albumin for, B., 652.
mill, for flour, B., 1019.
standard, interpretation of, B., 426.
- Balances**, weighing with, by method of swings, A., 1342.
gas-sp. gr., A., 1343.
magnetic, Curie-Chêneveau, A., 321, 599.
micro-, A., 189, 1098.
portable, A., 1098.
- Balata**, treatment of, (P.), B., 241.
manufacture of articles of, (P.), B., 162.
production of plastic material from, (P.), B., 113.
bromide, condensation of, with phenols and phenolic ethers, A., 1501.
hydrochloride, reduction of, A., 1349.
Philippine, B., 376.
*cyclo*Balatas, A., 1349.
- Baldness** due to thallium acetate, effect of potassium iodide on, A., 1533.
- Balkhashite**, origin of, A., 60.
- Balloon fabrics**, chemical control of, B., 142.
gelatin-latex, effect of protective coatings on absorption of moisture by, B., 1038.
for Gordon Bennett Cup balloons, B., 144.
- Balsam**, Peru, composition of, B., 876.
assay of, B., 876.
- Balsams**, detection of benzoic and cinnamic acids in sublimate of, B., 684.
- Bamboo**, action of ferric chloride on, B., 986.
active charcoal from, B., 85.
- Bananas**, soils for, in British Guiana, B., 690.
amylase of, A., 532.
- Banana pulp**, drying of, (P.), B., 123.
- Bandages** embodying unstable chemicals, (P.), B., 79.
antiseptic, (P.), B., 430.
germicide, production of, (P.), B., 877.
determination in, of vioform, B., 1163.
- ψ -Baptigenin**, synthesis of, A., 90.
- Barbatic acid**, identity of coccllic acid with, A., 83.
- Barbital**, poisoning by. See under Poisoning.
detection of, in human viscera, A., 118.
See also Veronal.
- Barbitals**, titration of, with silver nitrate, B., 286.
- Barbituric acid**, tautomerism of condensation products of, with aromatic aldehydes, A., 759.
salts, A., 245, 1411.
- Barbituric acid**, salts, effect of, after anaesthesia, A., 893.
poisoning by. See under Poisoning.
distribution of, in brain, A., 1019.
effect of, on intestines of cats, A., 1019.
esters and salts, determination of, alkalimetrically, B., 828.
esters, pharmacology of, A., 118.
compounds of, with 1-phenyl-2:3-dimethyl-4-isopropyl-5-pyrazolone, (P.), B., 606.
derivatives, structure and pharmacology of, A., 525.
extraction of, by acetone, A., 118.
manufacture of, (P.), B., 1165.
distribution of, in the brain, A., 525.
poisoning by. See under Poisoning.
assay of, B., 173.
detection of, in blood, A., 118.
in urine, A., 118.
determination of, volumetrically, B., 45.
synthesis of pyridine derivatives of, A., 1504.
pyridyl derivatives, manufacture of, (P.), B., 524.
N-substituted C-derivatives, preparation of, A., 223.
distribution of, in nervous tissues, A., 1018.
poisoning. See under Poisoning.
- Barbituric acids**, containing a *sec*-amyl group, preparation of, A., 94.
- Barbus brachicephalus**, liver oil of, A., 1521.
- Barbus plebeius**, catalase in eggs of, A., 519.
- Barite**. See Barytes.
- Barium**, and its alloys with mercury, production of, A., 180.
L-series spectrum of, A., 424.
electric furnace ionisation effect with, A., 3.
potential difference at contact of, with tungsten, A., 1061.
m.p. of, A., 925, 1063.
vapour pressure of, A., 1454.
clean-up of gases by, A., 27.
in human organs and excreta, A., 833.
- Barium alloys** with aluminium, A., 1065.
with nickel, B., 232.
manufacture of, (P.), B., 236.
- Barium compounds**, use of, as fluxes, B., 405.
of perowskite structure, A., 433.
- Barium salts**, determination of, volumetrically, with potassium chromate and rosolic acid indicator, A., 1473.
- Barium aluminate**, production of, for production of alumina, B., 20.
chemical mineralogy of, A., 602.
determination in, of barium oxide and sulphide, B., 451, 947.
aluminates, formation of, from solid barium carbonate and alumina, A., 1469.
arsenate, reduction of, A., 313.
carbonate, production of, from heavy spar, B., 1141.
conversion of the sulphate into, B., 543.
perchlorate amines, A., 1213.
chloride, electrical conductivity of glycerol solutions of, A., 304.
equilibria of, with potassium chloride and sodium carbonate, A., 303.
effect of, on tissue oxidation, A., 896.
chloride ammine, effect of pressure on dissociation of, A., 168.
ferrite, microcrystalline, preparation of, A., 314.
fluoride, specific heat of, A., 437.
equilibrium of, with magnesium fluoride, A., 1077.

- Barium halides, hydrates, dehydration of**, A., 447.
 hydride, band spectrum of, A., 427.
 hydroxide, production of, and zinc sulphide, (P.), B., 187.
 infra-red spectrum of, A., 145.
 solubility of, in sodium hydroxide solutions, A., 577.
 thermal dissociation of, A., 168.
 prevention of scumming of ceramic products with, B., 850.
 hydrate, thermal dissociation equilibrium of, A., 168.
 iodate, solubility of, in salt solutions, A., 1457.
 nitrate, double decomposition of potassium chloride and, A., 168.
 distribution of, between saturated solution and strontium nitrate crystals, A., 577.
 precipitation of, by sulphuric acid in presence of nitric acid, A., 1088.
 ammoniates of, A., 159.
 oxide, heat capacity of, at low temperatures, A., 574.
 use of, in enamels, B., 674.
 sulphate, production of, (P.), B., 543.
 recovery of, from barytes, (P.), B., 724.
 flow potentials of, A., 161.
 adsorption by, of sodium laurate, A., 1069.
 peptisation of crystals of, A., 445.
 decomposition of, by chlorine, B., 1141.
 precipitation of, A., 317.
 in presence of bromides and chlorides, A., 1473.
 containing potassium permanganate, precipitation of, A., 595.
 precipitated, adsorption by, A., 28.
 hydrogen sulphate, transference number of, in sulphuric acid solution, A., 169.
- Barium detection and determination**—
 detection of, in presence of calcium and strontium, A., 719, 949.
 precipitation of, in copper-tin group in qualitative analysis, A., 54.
 determination of, spectroscopically, A., 837.
 volumetrically, A., 1472.
 as oxalate, A., 1338.
- Bark, Bourdaire**, A., 1041.
- Barkhausen effect**, magnetic, by irradiation with ultrasonic waves, A., 287.
- Barley**, dehulling of, with sulphuric acid and inheritance of smut, B., 118.
 influence of aeration on diastatic activity of, during steeping, A., 249.
 fat in, and its malting products, A., 134.
 protein content of, at various stages, A., 268.
 proteins in malt and, B., 779.
 formal-titratable protein-hydrolysis products of, B., 1112.
 production of lactic acid by fermentation of, B., 872.
 effect of harvesting methods on moisture content and grade of, B., 697.
 malting quality of, B., 695.
 classification of protein-nitrogen of brewery products from, B., 1112.
 digestibility by hens of crude fibre of, B., 972.
 seed, *Fusarium* and *Helminthosporium* in, and seedling blight, B., 690.
 brewing, quality of, B., 871.
 anthocyanin discolorations in, B., 424.
 determination in, of protein and water, B., 1015, 1112.
 germinated, phospho-organic compounds in products of grinding of, B., 746.
- Barley**, Swedish, gramine from, A., 1386.
- Barley extract**, determination of, B., 603.
 by Lüers and von Miller's method, B., 694.
- Barley plants**, effect of calcium cyanamide on seed germination and on charlock in, B., 777.
 development of amylase during germination of, A., 249.
 growth of, B., 326.
 effect of adsorbents on, B., 918.
 influence of organic matter on, B., 165.
 respiration of, A., 904.
 chlorophyll and carotenoids in seedlings of, A., 1290.
 gramine from leaves of, A., 1434.
 mutants, chlorophyll and gramine contents of, A., 1040.
 chlorophyll-defective, biochemistry of, A., 263.
 control of smut on, B., 246.
 incidence of "take-all" on, on experimental plots at Woburn, B., 821.
- Barley powder**, increase in amylase activity during autolysis of, A., 1024.
- Barytes**, origin of, in Appalachian Valley, A., 1345.
 recovery of, from oil-field drilling muds, B., 391.
 separation of, from calcite and fluorspar, B., 104.
 recovery of barium sulphate from, (P.), B., 724.
- Basalts**, weathering of, A., 1347.
 in the Westervald, B., 197.
- Base**, $C_{15}H_{22}N_2$, and its dimethiodide, from reduction of sophocarpino, A., 97.
 $C_{15}H_{26}N_2$, and its dimethiodide, from reduction of sophoridine, A., 97.
 $C_{15}H_{26}O_5N$, from *Ulex europaeus*, A., 365.
- Bases**, calculation of formulae of, A., 917.
 acidity potential of, A., 38.
 influence of electric moment on number of molecules of, fixed by salts, A., 1448.
 aromatic, secondary, solubility of salts of, A., 1488.
 in biological fluids, separation and determination of, by electrodialysis, A., 370.
 inorganic, action of, on alkyl halides, A., 1349.
 optically active, A., 1127.
 organic, effect of *o*-substitution on dissociation of, A., 1076.
 additive compounds of alkali halides and, A., 48.
 additive compounds of, with halides of bivalent metals, A., 49.
 sparingly soluble, influence of hydrophilic colloids on solubility of, A., 920.
 weak, determination of dissociation constants of, by silver iodide electrode, A., 170.
 electrolysis of salts of, A., 1330.
 potentiometric titration of, A., 1214.
 determination of, by electrodialysis, A., 52.
 in biological fluids by electrodialysis, A., 230.
- Base-exchange**, thermodynamics of, A., 1075.
- Base-exchange substances**, production of, (P.), B., 147, 948, 990, 991.
- Basedow's disease**. See Goitre, exophthalmic.
- Batate**. See Potatoes, sweet.
- Baths**, constant-temperature, with thermionic control, A., 465.
- Bating materials**, enzymic analysis of, B., 1105.
- Batteries**, (P.), B., 462.
 porous carbon diaphragms for, (P.), B., 777.
 fixing metal terminals to electrodes of, (P.), B., 363.
 partitioned boxes for, (P.), B., 158.
 constant-potential, (P.), B., 508.
 dry, bakelite containers for, (P.), B., 158.
 depolarising electrode for, (P.), B., 108.
 electrolyte for, (P.), B., 67.
 pile type, tightening-up device for, (P.), B., 558.
 secondary, low-discharge, B., 1099.
 storage, (P.), B., 682, 773, 910.
 containers for, (P.), B., 633.
 plates for, (P.), B., 1100.
 separators for, (P.), B., 108.
 variation of, on keeping, B., 1001.
 behaviour of lead, lead-antimony, and lead-calcium alloys in, B., 1001.
 recovery of lead from scrap plates of, (P.), B., 1000.
 generation of stibine by, B., 1001.
 alkali zincate, with cathode filled with zinc powder, B., 507.
 alkaline, B., 681.
 active materials for, B., 1099.
 nickel-iron, B., 811.
 lead, reactions in, B., 773.
 lead-acid, effect of temperature and discharge rate on capacity of, B., 1052.
 wet, containers for, (P.), B., 683.
- Bauxite**, purification of, (P.), B., 849.
 decomposition of, by sodium sulphate, B., 493.
 production of aluminium oxide, etc., from, (P.), B., 270.
 adsorbents from, for oil refining, (P.), B., 147.
 Hessian deposits of, A., 323.
 Poshan, extraction of alumina from, B., 305, 1141.
 Ural, catalysis of reduction of sulphur dioxide by, B., 802.
- Beans**, effect of endocrine preparations on growth of, A., 418.
 hydrolysis of phytin compounds from, A., 134.
 chocolate spot of, B., 74.
 adzuki, pigment of, A., 267.
 castor. See Castor-boans.
 djoukol, amino-acid from, A., 966.
 mottled gram, constituents of, A., 391.
 mung, vitamin-B₁ and -B₂ in, A., 415.
 soya. See Soya beans.
 Spanish carob, B., 779.
- Bean plants**, development of cotyledonary buds of, A., 419.
 toxicity of calcium arsenate to foliage of, B., 742.
 bacterial blight of, B., 1012.
 control of Mexican bean beetles on, B., 1012.
 control of insects on, B., 246.
- Bearings**, brass for, (P.), B., 680.
 copper for, (P.), B., 680.
 colloidal suspensions of graphite in metals for, (P.), B., 1098.
 pressed materials impregnated with synthetic resins for, B., 335.
 Bohn copper-lead, B., 104.
 steel, uniform hardening of, B., 153.
- Bearing metals**. See under Alloys.
- Beaters**, heart-shaped, (P.), B., 883.
- Beckmann rearrangement**, A., 1493.
- Bequerelite**, A., 1479.
- Bees**, fruit-spraying and culture of, B., 375.
 arsenic in, after arsenical dusting of crops, B., 428.

- Bees**, preparation for treatment of rheumatism, etc., from poison of, (P.), B., 478.
poisoning of, by insecticides, B., 969.
honey, contents of ventriculus of, B., 375.
effect of bactericides on longevity of, A., 1413.
- Bee-moth**. See *Galleria mellonella*.
- Bees-wax**. See under Wax.
- Beech**, distribution of constituents of, A., 1039.
felted coccus of. See *Cryptococcus fagi*.
- Beech wood**, steam treatment of, B., 548.
lignin from, A., 550.
corrosion of type metal by, B., 770.
- Beef**, preservation of, (P.), B., 748.
loin and heel cuts of, as source of nitrogen and phosphorus, A., 652.
amino-acids in proteins of, A., 1014.
chilled, taint of fat of, B., 172.
- Beer**, manufacture of, (P.), B., 121, 1113, 1160.
mashing process in, B., 202.
oxidation-reduction potential during, B., 203.
clarification of, (P.), B., 520.
clarification of wort content of, B., 519.
sterile filtration of, B., 1113.
influence of grinding of malt on quality of, B., 76.
influence of biological acidification on composition of, B., 871.
 η of, B., 40.
lactic acid in, B., 650.
occurrence of sarcinae in, B., 203, 1016.
preservation of, (P.), B., 696.
susceptibility of, to cold, B., 76.
resistance of, to *Saccharobacillus pastorianus*, B., 695.
sterility of transport casks for, B., 76.
stability of, from transport casks, B., 603.
draught, filtration of, B., 871.
detection in, of dulein, B., 330.
of starch, B., 1113.
- Beet sugar**. See under Sugar.
- Beetles**, non-arsenical stomach poisons for control of, B., 118.
blister, control of, with barium silicofluoride, B., 375.
brassy willow. See *Phyllodecta vitellinae*.
cockchafer, control of, B., 168.
flea-, control of, B., 232.
flour, phosphorus content of, and its need for vitamin-D, A., 1263.
control of rice weevils and, B., 250.
toxicity of carbon dioxide-methyl formate mixtures to, B., 1013.
Fuller's rose, control of, in greenhouses, B., 778.
Mexican bean, control of, B., 1012.
- Beetroots**, sugar, germination of, A., 1043.
growth of, in late summer, B., 73.
under irrigation, B., 646.
influence of boron on, A., 266; B., 690.
sugar content and conditions of, B., 326.
culture of, B., 646.
influence of stand, nitrogen, and cultivation on, B., 690.
comparative trials of seeds for, B., 422.
development of, during first year, A., 131.
respiration in leaves of, A., 1177.
influence of excess fertilisers on composition of, B., 868.
fertilisers for, B., 646.
in Colorado, B., 199.
influence of soil, climate, and manuring on, B., 166.
chemical composition and productive value of, B., 200.
maturity and manufacturing value of, B., 869.
- Beetroots**, sugar, improvement of, by breeding, B., 199.
effect of ammonia and nitrates on yield of, B., 868.
influence of nematodes on yield of, B., 1158.
effect of carbon dioxide on pH and nitrogen of, A., 905.
harmful nitrogen in, B., 168.
harmful amino-nitrogen in, B., 1158.
pectic matter in, B., 1063.
pectins in, B., 648.
influence of drying on, B., 1014.
flocculation of, by alkaline-earth bases, B., 869.
production of pectin from, (P.), B., 969.
effect of phosphates on, B., 72.
phosphorus supplements to by-product ratios of, A., 654.
starch equivalent of, B., 78.
physiology of sugar accumulation in, A., 264.
loss of sugar during storage of, B., 200.
paraffin wax for winter storage of, B., 166.
feeding of cows with slices and leaves of, B., 972.
ensilage of leaves of, with hydrochloric acid, B., 699.
preservation of silage of leaves of, B., 923.
aleoholic fermentation of, (P.), B., 921.
oils for prevention of frothing in distilleries for, B., 871.
diffusion of cossettes of, B., 200, 518.
diffusers for extraction of sugar from cossettes of, (P.), B., 871.
pressure loss and dead space in diffusion batteries for, B., 692.
influence of maturity of, on purification of juice, B., 1063.
thermophilic fermentation of pulp of, B., 650.
spoilage of wet pulp of, B., 328.
protein from pulp from, B., 428.
inoculation of exhausted slices of, with "Laktacidin," B., 1111.
fore-lifting of, under Schleswig conditions, B., 647.
role of boron in crown rot of, B., 374.
boron deficiency and heart- and dry-rot in, B., 38.
curly top virus of, A., 1043.
heart rot of, B., 472.
"leaf yellows" in, A., 674.
dry, sugar losses in storage of, B., 119.
fodder, sugar, and their hybrids, phosphorus in, B., 869.
forage and sugar, constituents of, A., 551.
of high forage yield, fertilisers for, B., 199.
frozen, working of, B., 1063.
germinating, variations in enzyme content of, A., 264.
protruding from soil, "workability" of, B., 516.
seed, control of leaf-louse on, B., 1110.
determination in, of ash, by electrical conductivity, B., 518.
of sucrose, by Sachs-le-Docte method, B., 76.
determination of water in dried slices of, B., 283.
- Behenic acid**, *p*-bromophenacyl ester, A., 864.
- Behenic acids**, monobromo-, and decabromo-, octabromide, A., 195.
- Beidellite**, hydrothermal synthesis of, A., 1333.
- Belladonna**, cultivated, alkaloid content of, B., 286.
- Belladonna extract**, preservation of solutions of, and determination of their alkaloid content, B., 653.
- Belladonna leaves**, determination in; of alkaloids, B., 748.
- Belladonna root**, extraction of, B., 876.
effect of preliminary maceration on percolation of, B., 973.
- Belts**, dressing for, (P.), B., 85.
- Beltting**, curried leather, adhesion of, to pulleys, B., 864.
- Bent**, colonial. See *Agrostis tenuis*.
- Bentonite**, A., 1346.
swelling of, B., 947.
fluidity of suspensions of, A., 164.
effect of, on plasticity of mortar, etc., B., 547.
- Benzaldehyde**, production of, from toluene, B., 137.
electro-reduction of, A., 1462.
condensation of, with acid chlorides, A., 1497.
with enolates, A., 344.
with *o*-phenylenediamine, A., 358.
condensation products of, with pyridine bases, A., 988.
pure, action of, with puro potassium cyanide, A., 938.
and *m*-nitro-, *p*-nitrobenzoylhydrazones, A., 1259.
and *o*-hydroxy-, *N*-nitroguanylimines, A., 769.
oxalaldehyde, A., 869.
and *o*-, *m*-, and *p*-nitro-, phenylhydrazones-*p*-sulphonpiperidides, A., 620.
and *m*- and *p*-nitro-, *o*-tolylsemicarbazones, A., 1259.
influence of diet on oxidation of, A., 1530.
determination of, A., 102.
determination in, of chlorine, B., 261.
- Benzaldehyde**, *p*-bromo-, and *p*-hydroxy-, electric moments of, A., 1447.
o-bromo-, and *o*-bromonitro-derivatives, *tetra*- and *penta*-bromophenylhydrazones of, A., 1231.
2,6-*di*bromo-, and 3,6-*di*chloro-2-iodo-, and their oximes, A., 1238.
bromo-, chloro-, and nitro-4-hydroxy-, benzoyl derivatives, and *p*-hydroxy-, benzoyl derivative, *p*-bromophenylhydrazones, A., 208.
2-bromo-5-hydroxy-, di-*p*-tolylmercaptal, *o*-nitro-, diphenylmercaptal, and *m*-nitro-, diphenyl- and di-*p*-tolylmercaptals, A., 970.
o-chloro-, addition of bromoform and chloroform to, A., 486.
2,4-*dinitro*phenylhydrazones, A., 482.
o-hydroxy-, condensation of, with malonic acid, in presence of pyridine, A., 353.
3,4-*di*hydroxy-, derivatives of, A., 989.
nitro-derivatives, condensation of, with styryl methyl ketone, A., 345.
o-nitro-, photo-isomerisation of, A., 48.
condensation of, with cotarnine, A., 1513.
m-mono- and 2,4,6-*tri*-nitro-, *m*-nitrobenzhydrazides, A., 743.
p-nitro-, β -naphthoylhydrazones, A., 77.
2,4-*di*- and 2,4,6-*tri*-nitro-, Schiff's bases of, A., 502.
- Benzaldehydes**, *o*-nitro-, alkaline hydrolysis of azlactones derived from, A., 1385.
substituted, dipole moments of, A., 1304.
- Benzaldehyde-2:3:4:5-tetrabromophenylhydrazidine**, and *m*- and *p*-nitro-, A., 1231.
- Benzaldehydepentabromophenylhydrazidine**, *m*- and *p*-nitro-, A., 1231.

- Benzaldehydechloroimine**, *o*- and *m*-bromo-, *m*-chloro-, and *p*-nitro-, A., 620.
- Benzaldehydepentachlorophenylhydrazide**, *m*- and *p*-nitro-, A., 1231.
- Benzaldehyde-*p*-diazonium sulphate**, preparation of, and its condensation with benzene, A., 338.
- Benzaldehydophenylhydrazone-*p*-sulphonic acid**, and *o*- and *p*-nitro-, salts of, A., 620.
- Benzaldehydophenylhydrazone-*p*-sulphonic acid**, *m*- and *p*-hydroxy-, and *p*-nitro-, hydrates of, and their salts, A., 491.
- Benzamide**, *N*-bromo-, additive compound of, with pyridine, A., 355.
- Benzamidine**, *p*-chloro-, hydrochloride, A., 487.
- Benzanilide** imidochloride, condensation of, with substituted dialkylanilines, A., 1241.
- Benzanilide**, 3:5-dibromo- and 3:5-dibromo-nitro-derivatives, A., 1231.
- 2:4:6-tribromo-, A., 969.
- Benzanilides**, substituted, hydrolysis of, A., 969.
- N'*- β -Benzanilidoethyl-*N*-phenylpiperazine** hydrochloride, A., 358.
- 1:2-Benzanthraquinonyl-5-acetic acid**, A., 1117.
- Benzanthrone**, location of ethylenic linkings in, A., 751.
- formation of, from anthraquinone and glycerol, A., 215.
- derivatives, manufacture of, (P.), B., 894.
- containing selenium, manufacture of, (P.), B., 1134.
- Benzanthrone**, dichloro-derivatives, constitution, formation, and separation of, A., 1499.
- 1:9-Benzanthrone**, constitution and nitration of, A., 1125.
- Benzanthrones** with condensed heterocyclic rings, and their derivatives and derived dyes, A., 763.
- Benzanthrone dyes**, manufacture of, (P.), B., 219, 220.
- vat, A., 1499.
- manufacture of, (P.), B., 397.
- 1:9-Benzanthrone-8-carboxylic acid**, and its methyl ester, and 11-hydroxy-, lactone of, A., 859.
- Benzazide**, *p*-chloro-, as reagent for amines, A., 1117.
- as reagent for phenols, A., 998.
- 3:5-dinitro-, use of, in identification of phenols, A., 207.
- Benz- β -benzoylstyrylamide**, A., 355.
- Benz-3:4:5- and -2:4:6-tribromoanilides**, A., 969.
- Benzdioxan**, manufacture of bases from, (P.), B., 124.
- Benzene**, structure of, A., 153, 1057, 1444.
- and hexachloro-, A., 431.
- and its methyl derivatives, A., 1061.
- vibrating mechanical model of, A., 568.
- vibration frequency of molecules resembling, A., 1057.
- addition of symmetrical diatomic molecules to, A., 284.
- nucleus, influence of electric moment on substitution in, A., 684.
- replaceability of chlorine in, A., 1497.
- replacement of halogen by nitrile group in, A., 1121.
- ionisable hydrogen of, A., 1302.
- orientation in, A., 976.
- production of, from Ukrainian brown coal, B., 1123.
- separation of, from Shukkokko crude gasoline, B., 179, 392, 535.
- Benzene**, separation of, from toluene and xylene in Shukkokko crude oil, B., 581.
- recovery of, from coal gas, B., 292, 708; (P.), B., 440.
- removal of thiophen from, with acidified hypochlorite solutions, B., 885.
- rotational level of, A., 810.
- absorption spectrum of, at high temperatures, A., 805.
- far infra-red absorption spectrum of, A., 281.
- ultra-violet absorption spectrum and ionisation potential of, A., 1189.
- ultra-violet absorption spectra of mixtures of acetone and, A., 428.
- Raman effect in, A., 681, 914.
- Raman spectrum and structure of, A., 806, 1301.
- scattering of light by, A., 146.
- molecular heat of, A., 1063.
- supercooling of, A., 1449.
- ebullioscopic constant of, A., 294.
- pure, b.p. of, A., 289.
- vapour, rotational Raman scattering in, A., 146.
- toxicity of, A., 895.
- adsorption of, by silica gel, B., 342, 714.
- volatility of mixtures of alcohol, heptane, and, A., 157.
- density and refractive index of, A., 1056.
- action of radon on aqueous solutions of, A., 1469.
- volume changes in mixtures of, with chloroform, A., 1456.
- water-tolerance of mixtures of gasoline with, B., 86.
- crystals, Raman effect in, A., 564.
- bromination of, in presence of selenium and tellurium, A., 203.
- chlorination of, B., 1036.
- electrochemical chlorination of, A., 45, 709.
- action of catalytic poisons on hydrogenation of, A., 456.
- high-pressure hydrogenation of, B., 261, 296.
- nitration of, A., 828.
- sulphonation of, (P.), B., 218.
- condensation of, with tertiary aliphatic alcohols, A., 967.
- thermal reactions of, B., 539.
- reaction of, with aromatic aldehydes, in presence of aluminium chloride, A., 344.
- with sulphur, in presence of aluminium chloride, A., 334.
- with titanium tetrachloride etherates, A., 616.
- effect of strain in cycloalkylcarbinols on reactivity with, in presence of aluminium chloride, A., 80.
- direct introduction of deuterium into, A., 74.
- derivatives, external photo-electric effect and constitution of, A., 147.
- substituted, absorption spectra of, A., 913.
- monosubstituted, dipole moments of vapours of, A., 283.
- polysubstituted, Raman spectra of, A., 146, 428.
- homologues, electrochemical oxidation of, A., 1229.
- removal and determination of, in biological material, A., 1552.
- and its halogen derivatives, antiseptic power of, A., 126.
- detection of, by formation of resorufin, A., 463.
- in ethyl alcohol, B., 617.
- Benzene**, determination of, in air, B., 576.
- in air of coke works, B., 707.
- in alcohol-benzine motor fuels, B., 536.
- See also Benzol.
- Benzene**, bromo-, effect of, on utilisation of cystine and methionine by rats, A., 1533.
- effect of, on glutathione content of tissues, A., 1159.
- bromo-, chloro-, and iodo-, velocity of reaction of sodium vapour with, A., 1082.
- bromo-2:4-dinitro-, reaction of, with primary aromatic amines, A., 1465.
- chloro-, hydrolysis of, in vapour phase, B., 938.
- catalytic hydrolysis of, by steam, B., 137.
- p*-dichloro-, insecticidal value of, B., 647.
- hexachloro-, fluorination of, A., 203.
- dichloriodinitro-derivatives, A., 1113.
- chloronitro-derivatives, production of, (P.), B., 939.
- 1-chloro-2:4-dinitro-, condensation of, with rosaniline, A., 81.
- 1-chloro-3:4-dinitro-, derivatives of, A., 855, 1489.
- fluoro-, Raman spectrum of, A., 146.
- 1:3:5-fluorodinitro-, A., 1229.
- halogenonitro-derivatives, reactivity of halogens in, A., 1113.
- m*-halogenonitro-derivatives, electrolytic reduction of, to azo-compounds, A., 1232.
- 1:2:3:4-tetrahydroxy-, derivatives of, A., 80.
- hexaiodo-, preparation of, A., 739.
- nitro-derivatives, coloured, A., 1302.
- nitro-, molecular polarisation of, A., 916.
- polarisation and dipole moment of, A., 567.
- dipole moment of, A., 13, 684.
- scattering of light by, A., 146.
- vapour pressure curve of, A., 438.
- magnetic birefringence of solutions of, near critical solution point, A., 14.
- association of, in carbon tetrachloride, A., 166.
- association, dipole moment, and dielectric constant of, A., 13.
- electrical polarisation of concentrated solutions of, A., 817.
- viscosity of mixtures of, with hexane, A., 927.
- reduction of, with glucose in alkaline solution, B., 984.
- dinitro-derivatives, analysis of, B., 296.
- o*- and *m*-dinitro-, oxidation of, A., 970.
- di*- and *tri*-nitro-derivatives, dipole moments of, A., 1056.
- s*-trinitro-, dipole moment of, A., 13.
- Benzene series**, chemical morphology in, A., 1377.
- comparison of heterocyclic systems with, A., 1377.
- Benzeneazooacetoacetic acid**, 3:5-di- and 3:4:5-tri-bromo-, 3:5-dichloro-, and 3:5-dichloro-4-bromo-, ethyl esters of, A., 1231.
- 2:4-dinitro-, ethyl ester, A., 206.
- Benzeneazooacetylacetone**, 2:4-dinitro-, A., 206.
- Benzeneazooaldehydocarvacrol**, and its phenylhydrazone, A., 1239.
- Benzeneazooaldehydo-*o*-cresol**, A., 1239.
- Benzeneazooaldehydoresorcinol**, A., 1239.
- Benzeneazooaldehydoholmol**, and its phenylhydrazone, A., 1239.
- 5-Benzeneazo-1-aminobenzthiazole**, *p*-amino-, A., 226.

- p*-(Benzeneazo)azoxybenzenes, A., 338.
 Benzenazobenzoylacetone, 2:4-dinitro-, A., 206.
 Benzeneazo- γ -bromoacetoacetic acid, 2:4-dinitro-, ethyl ester, A., 206.
 Benzeneazo- $\gamma\gamma$ -dibromoacetoacetic acid, 2:4:6-tribromo- and -trichloro-, ethyl esters, *N*-acetates, A., 207.
 Benzeneazo- γ -mono- and - $\gamma\gamma'$ -di-bromoacetoacetic acids, 3:5-di-bromo- and -chloro-, and 3:5-dichloro-4-bromo-, ethyl esters, A., 1231.
 Benzeneazo- γ -chloroacetoacetic acid, 2:4-dinitro-, ethyl ester, A., 206.
 Benzenazodihydrilacetonedicarboxylic acid, and its ethyl ester, anhydride, and derivatives, A., 991.
 Benzeneazo-3:4-dimethylphenyl-*l*-arabamine, *p*-nitro-, A., 1510.
 Benzenazoformhydroxamic acid, *p*-chloro-, ammonium salt, A., 855.
 Benzeneazo-*p*-hydroxynaphthanilide, 3-amino-, B., 988.
 1-Benzeneazo-2-hydroxy-3-naphth-1'-benzoyl-2'-naphthylamide, and *p*-nitro-, A., 336.
 Benzeneazo- β -hydroxynaphtho-*p*-nitranilide, 4-amino-, B., 988.
 Benzeneazo- γ -iodoacetoacetic acid, *mono*-, *di*-, and *tri*-bromo-, and *o*-nitro-, ethyl esters, A., 207.
 Benzenazolignin, A., 491.
 Benzeneazo- β -naphthol, 3:5-dibromo-, and 3:5-di- and 2:3:4:5-tetra-chloro-, A., 1231.
m-iodo-, A., 744.
 Benzene-1-azo- β -naphthol-3-azo-(1':8'-aminonaphthol-3':6'-disulphonic acid), A., 743.
 Benzene-1-azo- β -naphthol-3-azo- β -naphthol-6'-sulphonic acid, and its sodium salt, A., 743.
 2-Benzeneazo- α -naphthylamine, derivatives of, and 2-*p*-bromo-, A., 1490.
 Benzeneazo-oxalodihydrilacetoacetic acid, ethyl ester, A., 991.
 Benzenazophenols, 3:5-dibromo-, and 3:5-dichloro-, A., 1231.
 Benzene-1-azophenol-3-azo- β -naphthol, A., 743.
 4-Benzeneazophenyl cholesterylcarbonate, A., 745.
 3-Benzeneazo-2-phenylindoles, A., 1251.
 Benzenazophenylmaleamic acid, A., 491.
 Benzenazosalicylaldehyde, phenylhydrazones of, and *o*- and *p*-chloro-, and *m*-nitro-, and their semicarbazones, and *o*-nitro-, and its phenylhydrazone, A., 1239.
 Benzenazotridiphenylmethane, and its decomposition, A., 77.
 Benzenazotriphenylmethane, reactions of, A., 207.
 Benzenediazonium boronfluoride, 3:5-dinitro-, A., 1229.
 Benzene-1:3-disazo- β -naphthol, A., 743.
 Benzene-1:3-disazophenol, A., 743.
 Benzenephthalins, hydroxy-, purification of, (P.), B., 444.
 Benzenesulphonic acid, *m*-nitro-, 2:5-dichlorophenyl ester, A., 1114.
N-Benzenesulphon-*N*-acetamidophenyl benzenesulphonate, A., 1361.
o-Benzenesulphonamidophenyl benzoate, A., 1361.
 Benzenesulphon-*p*-aminoanilide, and its *d*-camphor-10-sulphonate, A., 1118.
N-Benzenesulphon-*N*-benzamidophenyl benzenesulphonate, A., 1361.
N-Benzenesulphon-*N*-benzylamidophenyl benzenesulphonate, A., 1361.
 Benzenesulphonhydrazides, luminescence of, A., 808.
 Benzenesulphonic acid, production of, B., 137.
 sodium salt, production of phenol from sodium hydroxide and B., 91, 137.
o-aminophenyl ester, and its benzoyl derivative, A., 484.
 glycine ester, A., 970, 1486.
 Benzenesulphonic acids, amino-, salts, with bivalent metals, A., 336.
 chloro-, arylamine salts, A., 206.
 substituted, aluminium salts, and their hydrolysis, A., 934.
 Benzenesulphonimidoxanthene, A., 742.
 α -Benzenesulphonyl- ϵ -carbobenzyloxy-*l*-lysine, methyl ester, A., 1417.
p-Benzenesulphonyldiphenyl, A., 85.
 Benzenesulphonyl-*d*-glutamic acid, butyl ester, A., 101.
 Benzenesulphonyl-*i*- β -hydroxyglutamic acid, butyl ester, A., 101.
 Benzenethiolsulphonic acid, and *p*-bromo-, *o*-nitrophenyl esters, A., 1114.
 1:3:5-Benzenetricarboxylic acid, triethyl ester, crystal structure of, A., 921.
 1-Benzencylcarbonylaminotetrazole, 4-amino-, A., 1509.
 3:4-Benzfluorene, and its picrate, A., 1359.
 3:4-Benzfluorenone semicarbazone, A., 1359.
 Benzhydrazide, luminescence of, A., 808.
 Benzhydrazide, *p*-nitro-, identification of aldehydes and ketones with, A., 1259.
 Benzhydrazides, *m*-nitro-, A., 743.
 Benzhydroxamic acid, salts, A., 479.
 β -Benzhydrylaminoethane, α -amino-, and its derivatives, A., 855.
 Benzhydrylaminoethylacetacetanilide, A., 1232.
 Benzhydrylaminoethylenemalonanilide, ethyl ester, A., 1231.
 β -Benzhydrylamino- α -phenylacrylonitrile, A., 1231.
N-Benzhydryl-*N'*-*p*-anisylformamidine, A., 1231.
 1-Benzhydryl-8-chlorodiphenylmethyl-naphthalene, A., 858.
N-Benzhydryl-*N'*-*p*-chlorophenylformamidine, A., 1231.
 1-Benzhydryl-8-hydroxydiphenylmethyl-naphthalene, and its potassium derivative, A., 858.
 1-Benzhydryl-8-methoxydiphenylmethyl-naphthalene, A., 858.
 Benzhydryl methyl ketone, and its derivatives, A., 621.
 2-Benzhydryl-3-methyl-1:4-naphthaquinol diacetate, A., 1243.
 2-Benzhydryl-3-methyl-1:4-naphthaquinone, A., 1243.
 4-Benzhydrylnaphthalene, 1:2-dihydroxy-, and its diacetyl derivative and diphenylmethylene ether, A., 1243.
 4-Benzhydryl-1:2-naphthaquinone, A., 1243.
 1-Benzhydryl-8-naphthoic acid, methyl ester, A., 858.
N-Benzhydryl-*N'*-2-naphthylformamidine, A., 1231.
N-Benzhydryl-*N'*-phenylformamidine, A., 1231.
S-Benzhydrylthioglycollic acid, A., 1502.
N-Benzhydryl-*N'*-*p*-tolylformamidine, A., 1231.
 Benzhydryl-1:2:2-trimethylcyclopentane, 3-cyano-1-hydroxy-, A., 754.
 Benzdine, production of, (P.), B., 183.
 sulphate, metal ammine salts from, A., 854.
 complexes of, with metallic salts, A., 613.
 use of, in quantitative analysis, A., 597.
 determination of anions with, A., 949.
 Benzdine, 2:2'-dichloro-, preparation of, A., 337.
 2:2'-dinitro-, derivatives of, A., 613, 1489.
 Benzil (*dibenzoyl*), crystal structure of, A., 1451.
 saponification of, A., 494.
 condensation of, with nitromethane, A., 347.
 and its derivatives, dihydrazones of, A., 862.
m-nitrobenzhydrazide, A., 743.
 Benziniazole, 2-amino-, A., 631.
 Benziniazole-5-arsinic acid, derivatives, A., 502.
N-(2-Benziminazolyldiethylmalonamidic acid, and its methyl ester, A., 631.
 Benziniazoles. See Naphthopyrazoles.
 Benzine, synthesis of, from carbon monoxide and hydrogen, B., 132, 293, 484, 581, 887, 1081.
 from coke-oven gas, B., 390.
 from brown-coal tar, B., 293.
 by Fischer-Tropsch method, Diesel oils from, B., 709.
 solid paraffin formed in, B., 582.
 apparatus for measuring vapour pressure of, B., 49.
 water-absorption and b.p. of mixtures of, with benzol and alcohol, B., 1081.
 volume changes of mixtures of petroleum and, with alcohol and motor benzol, B., 710.
 distribution equilibrium of, between alcohol and water, A., 159.
 action of bleaching earths on, B., 582, 757.
 corrosion of iron by, B., 727.
 anti-knock agents for, (P.), B., 180.
 gum inhibitors for, B., 1031.
 catalytic conversion of, into aromatic hydrocarbons, B., 710.
 cyclopentane hydrocarbons in, B., 836.
 hydrocarbon therapy in, A., 394.
 Emba, catalytic aromatisation of, B., 133.
 non-knocking, production of, (P.), B., 261.
 Rumanian, aromatic hydrocarbons in, B., 886.
 from Tschusov petroleum, desulphuration of, by ozonisation, B., 709.
o-Benzmethylamidophenyl benzoate, A., 1490.
 α -Benz- β -*S*-methylthiobenz- α -phenylhydrazide, α -*p*-nitro-, A., 1360.
 α -Benz- β -*S*-methyl-1-thionaphth- α -phenylhydrazide, α -*p*-nitro-, A., 1360.
 α -Benz- β -*S*-methyl-*p*-thiotolu- α -*p*-tolylhydrazide, A., 1360.
 2-Benz-*o*-nitrophenylamidophenyl methyl sulphide, A., 486.
 Benzotribromide, *p*-nitro-, A., 74.
 Benzotrichloride, sulphonation of, A., 967.
 4:5-Benzocoumaran-2:3-dione-*p*-methyl-anil, A., 485.
 5:6-Benz-2-coumaranone, A., 858.
 Benzodipyrroles, A., 759.
 Benzofuroquinolines, and their hydrochlorides and derivatives, A., 871.
 Benzoic acid, manufacture of, from phthalic acid, (P.), B., 348.
 from toluene, B., 137.
 heat of combustion of, A., 168.
 thermodynamics of mixtures of, with *p*-cresol, A., 1077.
 rapid evaporation of mixtures of, with acetic acid, A., 290.
 dissociation constant of, in salt solutions, A., 1076.
 distribution of, between water and *iso*-butyl alcohol, A., 441.

- Benzoic acid**, equilibrium of, with *p*-cresol, A., 35.
and its derivatives, reactivity of, hydrogen of hydroxyl group in, A., 487.
velocity of sulphonation of, A., 210.
phenolic derivatives, bromination of, and bromonitro- and bromomethyl-phenyl esters, A., 207.
detection of, in balsams and resins, B., 684.
in wines, B., 1160.
determination of, and its enzymic alteration in horse-kidney, A., 1408.
determination in, of water, ebulliometrically, A., 1140.
- Benzoic acid**, silver salt, iodo-complex of, A., 728.
strychnine salts, solubilities of, A., 695.
- Benzoic acid**, 2-bromocyclohexenyl ester, A., 1223.
and nitro-, monobromophenyl and mono-, di-, and tri-bromotolyl esters, A., 339.
2-chlorocyclohexenyl ester, A., 857.
ethyl ester, dipole moment of, A., 694, 1304.
hydroxydiphenyl esters, A., 1233.
l-menthyl *o*-substituted esters, rotation of, A., 1192.
methyl ester, dipole moment of, A., 694.
nitrophenyl and tolyl esters, bromination of, and 2-bromo-*p*-tolyl ester, A., 746.
nonadienyl ester, A., 67.
 $\alpha\beta$ -triphenylethyl ester, A., 338.
- Benzoic acid**, amino-derivatives, reaction of, with cadmium and zinc salts, A., 719.
amino-, esters, bactericidal power of, A., 1031.
m- and *p*-amino-, reaction of, with thionyl chloride, A., 1235.
p-amino-, ester derivatives of, determination of, A., 1259.
dialkylaminoethoxyethyl esters, and their anesthetic action, A., 1363.
m-mono- and 2:5-di-bromo-, nitrophenyl esters, A., 746.
4-bromo-2-amino-, β -chloroethyl ester, A., 1493.
3:5-di-bromo-2-iodo-, and its ethyl ester, A., 1237.
3:6-dichloro-2-iodo-, A., 1238.
4-chloro-3-nitro-, amide, A., 95.
m- and *p*-hydroxy-, condensation of, with propylene, A., 1358.
p-hydroxy-, esters, biological experiments with, A., 1412.
titration of, A., 928, 998.
determination of, A., 947.
2-iodo-3-hydroxy-, and its acetyl derivative, A., 975.
m- and *p*-nitro-, phenyl and tolyl esters, bromination of, and their bromo-derivatives, A., 856.
p-nitro-, spinasteryl and α -spinasteryl esters, A., 210.
3:5-dinitro-, basic lead salts, manufacture of, (P.), B., 751.
m- and 3:5-di-nitro-, *l*-menthyl esters, rotatory powers of, A., 443.
2:4:6-trinitro-, separation of, from picric acid, B., 664.
esters, A., 1259.
 α -glyceryl ester, and its $\beta\gamma$ -dinitrate, A., 81.
- Benzoic acids**, amino-, and hydroxy-, mercury alkyl salts, A., 202.
bromo- and chloro-4-hydroxy-, benzoyl derivatives, A., 208.
p-cyano-, halogeno-, and dinitro-, *p*-nitrobenzyl esters, A., 81.
- Benzoic acids**, halogeno-, dissociation constants of, A., 581.
hydroxy-, esters of, (P.), B., 940.
Benzoic acid-*N*-phenylimide, nitro-derivatives, esters of, A., 1494.
Benzoin, formation of, A., 938, 1084.
effect of light on, A., 622.
reduction of, at dropping mercury cathodes, A., 937.
mono- and di-nitrophenylcarbamates, A., 958.
Benzoin, *o*-chloro-, A., 494.
Benzoin, synthesis of, A., 1499.
Benzoin reaction, inhibition of, A., 1329.
 α -Benzoinoxime, compounds of, with bi-valent metals, A., 981.
Benzol, production of, from illuminating gas in continuous retorts, B., 1081.
by refrigeration, B., 391.
recovery of, B., 1124.
plant for, B., 259.
increasing yield of, from coke ovens, B., 581, 1081.
purification of, (P.), B., 759.
refining of, B., 484; (P.), B., 1083.
removal of carbon disulphide from, B., 791; (P.), B., 89.
wash oils for, B., 211.
regeneration of wash oil from, B., 885.
water-absorption and b.p. of mixtures of, with benzine and alcohol, B., 1081.
poisoning by, B., 752.
motor, production of, B., 392.
refining of, by Instill process, B., 179.
volume changes of mixtures of benzine and petroleum with, B., 710.
thiophen-free, recovery of, B., 1081.
determination in, of naphthalene, B., 885.
analysis of, B., 885.
See also Benzene.
- Benzonaphthol**, purification of, A., 970.
toxicity of, and protective action of sodium citrate, A., 526.
- Benzonitrile**, determination of, in coal-tar oils, B., 790.
- Benzophenone**, kinetics of keto-enol transformation of, A., 939.
oxime, oxidation of, A., 980.
N- and *O*- α -phenyliminobenzyl ethers, A., 1498.
o-tolylsemicarbazone, A., 1259.
determination of, A., 998.
- Benzophenone**, 2-bromo-5-nitro-, A., 1490.
chloro-, oximes, A., 215.
p-chloro-, 2:4-dinitrophenylhydrazones, A., 78.
o-nitro-, A., 1498.
- Benzophenone-*p*-dimethylaminoanil-2-carboxy-*p*-dimethylaminoanilide**, A., 1370.
- Benzopurpurin**, influence of alcohol on viscosity of sols of, A., 820.
- Benzopyrylium dyes**, spectrographic study of, A., 1129.
- Benzopyrylium salts**, formation of, from *o*-hydroxybenzylidenediacetophenone, A., 354.
o-Benzoquinone, 4-bromo-, A., 87.
o-Benzoquinones, relative oxidation potentials of, A., 86.
p-Benzoquinone, structure of, A., 921.
electrolytic production of, (P.), B., 796.
vapour, absorption spectrum of, A., 1302.
thermochemistry and kinetics of reaction of, with cyclopentadiene, A., 938.
gels of gelatin and, A., 445.
- p*-Benzoquinone, 2:3:5:6-tetraamino-, 2:5-di-acetyl derivative, A., 1509.
hydroxy-, manufacture of derivatives of, (P.), B., 1165.
- Benzoquinonedisulphonic acid**, 2:5-di-amino-, ammonium salt, A., 338.
- 2:3-Benzoxanthone**, A., 220.
constitution of, A., 1247.
- Benxoxazolethiocarbamide**, A., 1488.
- Benxoyl chloride**, and nitro-, condensation of, with bromophenols, A., 339.
action of, on cyclic methylenamines, A., 1385.
substituted derivatives, reactivities of, A., 1206.
trinitro-, condensation of, with glycerol, A., 81.
2:4:6-trinitro-, as reagent for identification of alcohols, A., 1259.
peroxide, catalysis by platinum of decomposition of, A., 941.
reactions of, A., 207.
- Benzoylacetanilide**, *p*-amino-, benzoyl derivative, (P.), B., 14.
- Benzoylactic acid**, ethyl ester, preparation of, A., 618.
- Benzoylacetilcarbazoles**, A., 990.
- Benzoylacetilmethane**, reaction of, with niobium and tantalum pentachlorides, A., 73.
 α -Benzoyl- α -acetyloctane, A., 198.
 α -Benzoyl- α -acetylpentane, A., 198.
5-Benzoyl-1-acetyl-4-phenylpiperidine, and 4-chloro-, and 4-hydroxy-, A., 355.
5-Benzoyl-1-acetyl-4-phenyltetrahydropyridine, A., 355.
trans- β -Benzoylacrylic acid, $\alpha\beta$ -dibromo-*p*-bromo-, methyl ester, A., 352.
9-Benzoylanthranol, 10-bromo-, A., 217.
 β -(*syn*)-1-Benzoylanthraquinone oxime, A., 809.
4-Benzoylanthraquinone-1-carboxylic acid, and its methyl ester, A., 752.
Benzoylauramine G, A., 639.
Benzoyl-3-azabenzanthrone, production of, (P.), B., 841.
Benzoyl-3-azabenzanthrone, 4-chloro-, production of, (P.), B., 841.
Benzoylazodiphenylmethane, and its thermal decomposition, A., 78.
1-Benzoyl-2-benzamidonaphthalene, A., 336.
1-Benzoylbenzanthrone-selenol, (P.), B., 444.
o-Benzoylbenzoic acid, and its methyl ester, A., 1372.
p-nitrobenzyl ester, A., 81.
manufacture of substituted derivatives of, (P.), B., 716.
o-Benzoylbenzoic acid, 4-chloro-5-nitro-, manufacture of, (P.), B., 585.
m-Benzoylbenzoic acid, 3'-nitro-4'-hydroxy-, and its ethyl ester, A., 753.
4-Benzoylbenzophenone-4'-carboxylic acid, A., 1371.
Benzoyl-2-benzoyl-3-azabenzanthrone, production of, (P.), B., 841.
Benzoyl-*p*-bromobenzoylmethylpyridinium bromide, A., 988.
1-Benzoyl-4-*n*-butylanthraquinone, A., 1124.
 γ -Benzoylbutyric acid, γ -2:4-di- and -2:4:6-tri-hydroxy-, A., 1372.
 α -Benzoylbutyrolactone, A., 980.
2-Benzoylcarbazole, A., 990.
9-Benzoylcarbazole, 3-amino-, A., 634.
 α -Benzoyl- ϵ -carbobenzyloxy-*l*-lysineamide, A., 1417.
2-Benzoyl-6-carboxy-4-methylmandelic acid, A., 748.
1-Benzoylallochrysoketone, and its oxime, A., 992.
Benzoylcotarnine derivatives, A., 1388.
Benzoylcotarnines, reactivity of aldehyde group in, A., 1388.

- 2-Benzoyldiethylaminoethanol, 4-bromo-2-amino-, and its hydrochloride, A., 1493.
Benzoyldiglycyl-L-glutamylglycine ethyl ester, A., 1416.
6-Benzoyl-2:4-dimethylbenzoic acid, and its *p*-nitrophenylhydrazone, A., 1369.
5-Benzoyl-2:4-dimethyl-3-ethylpyrrole, A., 632.
4-Benzoyldimethyl- α -naphthylamine, and its oxime, A., 1241.
1-Benzoyl-3:5-dimethylpyrazole, A., 1508.
5-Benzoyl-2:4-dimethylpyrrole, and its salts, A., 221.
2-Benzoyl-4:5-dimethyl-4'-tetrahydrobenzoic acid, A., 1372.
6-Benzoyl-2:7-dimethyl-1:2:3:4-tetrahydronaphthalene, A., 335.
3-Benzoyl-2:6-dimethyl-5:6:7:8-tetrahydroquinoline, and its picrate, A., 222.
6:7-Benzoylene-2-anisyl- $\beta\beta'$ -benzofuran, A., 92.
1:2-*o*-Benzoylene-5:4-($\alpha\beta$ -4'-bromonaphth)-iminazole, A., 1490.
6:7-Benzoylene-1:3-dimethyl- $\beta\beta'$ -benzopyrrole, and its perchlorate and oxidation product, A., 94.
6:7-Benzoylene-2-*p*-diphenyl- $\beta\beta'$ -benzofuran, A., 92.
6:7-Benzoylene-3-methyl- $\beta\beta'$ -benzopyrrole, and its perchlorate, and oxidation product, A., 93.
5:10-Benzoylenemorphanthridine, 9-hydroxy-, A., 869.
Benzoylenemorphanthridone, isomerism of oximes of 1-arylanthraquinones and, A., 869.
6:7-Benzoylene-2- α -naphthyl- $\beta\beta'$ -benzofuran, A., 92.
6:7-Benzoylene-2-phenyl-3-methyl- $\beta\beta'$ -benzofuran, A., 92.
8:9-Benzoylene-3:4-phthalylphenanthridine-5-carboxylic acid, A., 1132.
6:7-Benzoylene-2-*p*-tolyl- $\beta\beta'$ -benzofuran, A., 92.
 β -Benzoylthanesulphonic acid, and its barium salt, A., 498.
 β -Benzoylthylamine salts, A., 355.
1-Benzoyl-4-ethylanthraquinone, A., 1124.
9- β -Benzoylthyl-10-anthrone, A., 1124.
 β -Benzoylthylsulphonyl methyl peroxide, A., 498.
Benzoylformanilide, condensation of, with cyano-activated methylene compounds, A., 1365.
synthesis of pyrrolones from acetophenone and, A., 498.
Benzoylformoin. See $\alpha\gamma\delta$ -Triketone- $\alpha\delta$ -di-phenyl-*n*-butane, β -hydroxy-.
Benzoylformoin, *pp'*-dichloro-. See $\alpha\gamma\delta$ -Triketone- $\alpha\delta$ -di-*p*-chlorophenyl-*n*-butane, β -hydroxy-.
Benzoyl-L-isoglutamine, A., 1416.
Benzoylglycine, azlactone of, A., 489.
Benzoylglycuronic acid, constitution of, and its specific enzyme, A., 111.
Benzoylglycyl-*d*- and *l*-leucylglycines, A., 1416.
1-Benzoyl-4-*n*-hexylanthraquinone, A., 1124.
Benzoylhydrazinodiphenylmethane, A., 78.
1-Benzoylhydrocotarnine, 5-bromo-1-*o*-nitro-, and its hydrobromide, A., 1513.
3-Benzoyl-1-hydroxybenzhydrol-1:2:2-trimethylcyclopentane, A., 754.
1-Benzoyl-5- α -hydroxy-*o*-nitrobenzylhydrocotarnine, 1-*o*-nitro-, and its salts, A., 1513.
1-Benzoyl-5- α -hydroxy-*m*-nitrobenzylhydrocotarnine, 1-*m*-nitro-, and its hydrochloride, A., 1513.
2-(β -Benzoyl- α -*o*-hydroxyphenylethyl)cyclohexanone, A., 1377.
2-(β -Benzoyl- α -*o*-hydroxyphenylethyl)cyclopentanone, A., 1377.
Benzoyl-*dl*-leucylglycylglycine, A., 1416.
Benzoyl-lupinine, *p*-amino-, and *p*-nitro-, and their hydrochlorides, A., 634.
 α -Benzoyl-L-lysineamide, A., 1417.
r-Benzoylmandelic acid, *o*-nitro-, ethyl ester, A., 356.
Benzoylmandelonitrile, catalytic hydrogenation of, A., 1363.
Benzoylmenthylamines, *mono*- and *di*-nitro-, A., 88.
N-Benzoyl-L-menthylaminoacetic acid, A., 89.
1-Benzoyl-2-methylantraquinol diacetate, A., 92.
1-Benzoyl-2-methylanthrone, 9-hydroxy-, A., 92.
Benzoylmethylcarbinol, tautomerism of acetylphenylcarbinol and, A., 622.
2-Benzoyl-3-methyl-4-ethylpyrrole, and 5-bromo-, A., 632.
Benzoyl- α -methylglucosidyl dimethyl orthocarbonate, A., 1354.
Benzoyl- β -methylglucosidyl methyl carbonate, A., 1354.
5-Benzoyl-1-methyl-4-isopropylbenzene, 2-hydroxy-, A., 1369.
 β -1-Benzoyl-3-methyl-4-pyrazolylcrotonolactone, β -5-hydroxy-, A., 1508.
3-Benzoyl-2-methyl-5:6:7:8-tetrahydroquinoline, and its picrate, A., 222.
Benzoylmethylthiolacetic acid, and its semicarbazone, A., 1237.
Benzoyl-3-methylthiophens, and 4:5-di-bromo-, A., 355.
1-(1'-Benzoyl-2'-naphthaleneazo)-2-hydroxy-3-naphthoic acid, A., 336.
1-Benzoyl-2-naphthaleneazo- β -naphthol, A., 336.
4-Benzoylnaphthalomethylimide, A., 758.
1-Benzoyl- β -naphthylamine, and its derivatives, A., 336.
 α -Benzoyloxyisobutyric acid, methyl ester, A., 961; (P.), B., 716.
4-Benzoyloxy-3:5-dimethoxyphenylacetic acid, and its derivatives, A., 344.
Benzoyloxyethyl *p*-toluenesulphonate, A., 636.
Benzoylphenanthrenes, and their derivatives, A., 622.
3-Benzoylphenanthrene-9:10-quinone, A., 622.
Benzoylphenyl *p*-tolyl ethers, 2-nitro-, A., 1491.
5-Benzoyl-4-phenyl-1- β -benzoylthylpiperidine, 4-hydroxy-, and its salts, A., 355.
 α -Benzoyl- β -phenylethylpyridinium bromide, A., 988.
Benzoylphenylmethylenedithiolacetic acid, A., 1237.
3-Benzoyl-5-phenyl-1:2:4-oxadiazole, *p*-bromophenylhydrazone, A., 763.
O-Benzoyl-*N*-phenylpiperazine, and its hydrochloride, and *p*-amino-, and *p*-nitro-, A., 358.
3-Benzoyl-2-phenylcyclopropane-1-carboxylic acids, esterification of, A., 41.
3:4-Benzoyl-1-phenylisoquinoline-2'-carboxylic acid, production of, (P.), B., 841.
N-Benzoyl- α -piperidone, $\beta\beta$ -dibromo-, A., 1356.
 α -Benzoyl- γ -pivalyl- β -phenylpropane, A., 981.
Benzoylisopropylidenedihydroshikimonitrile, A., 1365.
Benzoylisopropylideneshikimic acid, and its methyl ester, A., 1365.
2-Benzoylpyridine semicarbazone, A., 990.
Benzoylquinoidiuonitrile, A., 1513.
Benzoylquinotoxin, A., 1514.
Benzoylschikimic acid, methyl ester, A., 1365.
Benzoylsukeseic acid, anhydride, A., 543.
6-Benzoylthiodiphenylamine, 3-nitro-, A., 615.
2-Benzoyl-3-*p*-toluenesulphonyl-4:6-benzylidene- α -methylglucoside, A., 1225.
3-Benzoyl-6-*p*-tolyl-2-methylpyridine, and its picrate, A., 1259.
 δ -Benzoylvaleronitrile, 8:2:4-dihydroxy-, A., 1372.
 α -Benz- β -phenylacet- α -phenylhydrazide, A., 1360.
6:7-Benz-5:10-phenylene-1:3-dimethylmorphanthridone, A., 992.
6:7-Benz-5:10-phenylenemorphanthridone, A., 992.
Benzpinacol diethyl ether, A., 345.
1:2-Benzpyrene, A., 741.
purification of, by chromatographic adsorption, A., 204.
carcinogenic action of, A., 886.
carcinogenic synthesis of, A., 968.
1:2-Benzpyrene, 4'-hydroxy-, and its derivatives, A., 1233.
Benzthiazole 1-carbamate, A., 220.
Benzthiazole, 1:5-diamino-, and its acetyl derivative, and 5-chloro-1-amino-, and their 1-carbamates, A., 226.
1-chloro-5-iodo-, A., 364.
5-nitrothiol-, and its disulphide, (P.), B., 264.
1-thiol-, preparation of, A., 364.
as analytical reagent, A., 1094, 1216.
determination of, argentometrically, A., 229.
determination in, of free sulphur, B., 162.
Benzthiazoles; synthesis of, from aldehydes and *o*-thiolamines, A., 1386.
Benzthiazoles, thiol-, manufacture of, (P.), B., 297.
Benzthiazolecarbamides, synthesis of, A., 226.
3-(2'-Benzthiazolyl)methyl-5-bromo-2-indolol, A., 1386.
2-(2'-Benzthiazolyl)methylene-*o*-1386- and 5:7-di-bromo-oxindoles, A., 1386.
2-(2'-Benzthiazolyl)methylene- ψ -indoxyl, A., 1386.
3-(2'-Benzthiazolyl)methylene-5-nitro-oxindole, A., 1386.
3-(2'-Benzthiazolyl)methyleneoxindole, and its derivatives, A., 1386.
3-(2'-Benzthiazolyl)methyleneoxindole, 3-6'-bromo-, A., 1386.
3-(2'-Benzthiazolyl)methylindole, 2-hydroxy-, A., 1386.
 α -Benz- β -thiobenz- α -phenylhydrazide, A., 1360.
 α -Benz- β -1-thionaphth- α -phenylhydrazide, A., 1380.
 α -Benz- β -thiophenylacet- α -phenylhydrazide, α -*p*-nitro-, A., 1360.
 α -Benz- β -thiophenylacet- α -phenyl- β -methylhydrazide, A., 1360.
 α -Benz- β -*o*-thiotolu- α -*o*-tolylhydrazide, A., 1360.
Benztriazole series, A., 1508.
Benztriazole-7-sulphonic acid, 4-amino-5-hydroxy-, and 4:5-dihydroxy-, potassium salt, A., 1509.
Benztriazolylacetic acids, A., 360.
Benzyl, free, preparation of, A., 603.
Benzyl bromide, effect of unipolar substituents on action of, with α -picoline and pyridine, A., 710.

- Benzyl bromide, rate of reaction of, with bases, A., 335.
2:4:6-tribromo-, A., 969.
sec.-butyl ether, A., 483.
chloride, production of, in lead-lined iron apparatus, B., 12.
b.p. and equilibrium of mixtures of toluene and, A., 575.
reaction of, with solid silver nitrate, A., 1466.
 γ -chloro- β -hydroxy-*n*-propyl and 2-hydroxy-1-cyclohexyl sulphides, A., 729.
 $\gamma\gamma$ -diethoxy-*n*-propyl ether, A., 846.
dodecyl ether, A., 483.
 γ -phenylpropyl ether, A., 493.
Benzylacetone, *o*-hydroxy-, reactions of, A., 985.
 α -Benzyladipic acid, and its ethyl ester, A., 977.
Benzylallylamine, *o*-amino-, hydrochloride, A., 365.
5-Benzyl-5-allyl-2-thiobarbituric acid, A., 1507.
Benzylamine, additive compounds of, with nickel salts of substituted acetic acids, A., 182.
2- ω -Benzylaminobenzylcyclohexanone, 2- ω - ω -amino-, A., 1367.
 γ -Benzylaminobutyric acid hydrochloride, A., 873.
 β -Benzylamino- $\alpha\gamma$ -diphenylpropanols, and their salts, A., 209.
 β -Benzylaminoethane, α -amino-, A., 1118.
 α -Benzylamino- β -*p*-methoxybenzylaminoethane, and its hydrochloride, A., 1119.
Benzylaminomethylanthydrocotarnine, and its dihydrochloride, and 2'-*mono*- and 3':4'-*di*-hydroxy-, dihydrochlorides of, A., 767.
4-Benzylamino-1:2-naphthoquinone, A., 585.
 β -Benzylamino- α -phenylpropanol, and its salts, A., 209.
4-Benzylamino-1-phenyl-1:4:5:6-tetrahydropyridazin-6-one, 5-bromo-, A., 991.
4-Benzylaminopyridine, 3-amino-, and 3-nitro-, A., 993.
Benzylaminothiethanesulphonic acid, potassium salt, A., 332.
Benzylaniline, *m*-nitro-, rate of reaction of, with benzyl bromide, and 3-chloro-4'-nitro-, A., 335.
 α -Benzylbenzamidoethane, β -amino-, benzoyl derivative, A., 1119.
 α -Benzylbenzamido- β -*p*-methoxybenzylbenzamidoethane, A., 1119.
4-Benzylbenzanthrone, A., 752.
Benzylbindone, and bromo-, and nitro-, A., 623.
N-Benzyl-*p*-bromobenzenesulphon-*p*-anisidide, A., 193.
Benzyl- β -bromovinylmalonic acid, ethyl ester, A., 975.
11-Benzylbrucine, oxidation of, A., 996.
d- γ -Benzyl-*n*-butyl alcohol, A., 1121.
l- γ -Benzyl-*n*-butyl bromide, A., 1121.
 β -Benzyl-*n*-butyric acid, *l*-ethyl ester, A., 1121.
d- β -Benzyl-*n*-butyric acid, A., 1121.
 α -Benzyl- γ -butyrolactone, A., 474, 854.
 α -Benzyl- γ -butyrolactone- α -carboxylic acid, A., 854.
Benzylcarbamic acid, cholesteryl ester, A., 209.
N-Benzylcarbonato-*d*-glutaminyl-*d*-glutamic acid, and its diethyl ester, A., 404.
N-Benzylcarbonato-*d*-glutaminylglycine, and its ethyl ester, A., 404.
N-Benzylcarbonato-*d*-glutaminylglycylglycine, ethyl ester, A., 404.
N-Benzylcarbonato-*d*- α -glutamylglycine, ethyl ester, A., 404.
N-Benzylcarbonato-*d*- α -glutamylglycylglycine, ethyl ester, A., 404.
Benzylcarbonyl chloride, action of, on insulin and proteins, A., 1422.
N-Benzylisocarbostyryl-3-carboxylic acid. See 1-Keto-2-benzyl-1:2-dihydroisoquinoline-3-carboxylic acid.
Benzylcellulose, production of, (P.), B., 1137.
cellulose for, B., 299.
solubility of, A., 822; B., 265.
dielectric study of benzene solutions of, A., 1319.
viscosity of benzene solutions of, A., 1459.
lacquers from. See under Lacquers.
Benzyl-*p*-chloroaniline, *p*-nitro-, and its rate of reaction with benzyl bromide, A., 335.
Benzylcholines, pharmacodynamic action of, A., 894.
5-Benzylcreatinine, 5-hydroxy-derivatives, A., 850.
iso- α -Benzylcrotonic acid, and its silver salt, ethyl ester, and amide, A., 854.
S-Benzylcysteinylglycine, and its synthesis and isolation from glutathione, A., 1486.
Benzyl- β -diethylaminoethylamine, (P.), B., 940.
10-Benzyl-9:10-dihydroglucosidone, A., 1381.
3-Benzyl-5:6-dihydronorharman, and its picate, A., 224.
Benzyl diketopiperazine, 3'-nitro-4'-hydroxy-, A., 1123.
Benzyl dimethylallylarsonium picate, A., 738.
Benzyl- β -dimethylaminoethylmalonic acid, ethyl ester, hydrochloride and methiodide, A., 853.
Benzyl dimethylcarbinol, Raman spectrum of, A., 681.
Benzyl dimethyl-*n*-propylarsonium picate, A., 738.
 α -Benzylethyl ethyl ether, β -chloro-, A., 81.
4-Benzylethylaminobenzophenone, and its oxime, A., 1241.
Benzyl ethyl ketone, α -chloro-, A., 621.
2-Benzylfuran, and its mercurichloride, A., 866.
10-Benzylglucosidone, A., 1381.
Benzylhexahydrophthalide, A., 1246.
dl- α -Benzyl-*n*-hexoic acid, and its salts and derivatives, A., 483.
 α -Benzyl-*n*-hexoic acids, α -*m*- and *p*-bromo-, and their salts and derivatives, A., 488.
Benzylidene chloride, sulphonation of, A., 967.
 $\alpha\gamma$ -Benzylidene β -cetyl and β -octadecyl glyceryl ethers, (P.), B., 1130.
2-Benzylideneacetofurone, A., 1377.
Benzylideneacetone *p*-nitrobenzoylhydrazone, A., 1259.
o-tolylsemicarbazone, A., 1259.
Benzylideneacetophenone *p*-nitrobenzoylhydrazone, A., 1259.
Benzylideneacetophenones, chlorinated, A., 1368.
Benzylidene-2-acetothienone, A., 1377.
p-Benzylideneaminoazoxybenzenes, A., 338.
2- ω -Benzylideneaminobenzylcyclohexanone, and its derivatives, A., 1367.
Benzylideneaminomethylanthydrocotarnine, and 2'- and 4'-*mono*- and 3':4'-*di*-hydroxy-, A., 767.
o-Benzylideneaminophenyl disulphide, A., 1386.
 β -Benzylideneamino- α -phenylcarbamidomethane, A., 1118.
6-Benzylideneamino-2-phenyl-5-styryl-1-ethylindoline ethiodide, A., 1505.
6-Benzylideneamino-2-phenyl-5-styrylindoline, and 6-*o*-chloro-, A., 1505.
2-Benzylideneaminothiophenol, and 4-chloro-, zinc salts, A., 1386.
3-Benzylideneaminooxanthone, and *p*-amino-, acetyl derivative, and *m*-*mono*- and 2:4-*di*-hydroxy-, A., 497.
4:6-Benzylidene-2:3-anhydro- α -methylalloside, A., 1225.
4:6-Benzylidene-2:3-anhydro- α -methylhexoside, A., 964.
4:6-Benzylidene-2:3-anhydro- α -methylmannoside, A., 1225.
 β -Benzylidene- ϵ -anhydro-*d*-sorbitol α -*p*-toluenesulphonate, A., 1104.
6-Benzylidene-2-anisylidene-4-methylcyclohexanone, A., 345.
2-Benzylidene-4:6-isocoumarone, *p*-hydroxy-, A., 220.
Benzylidenedehydro- α -matrinidine, and its derivatives, A., 1514.
Benzylidenediacetophenones, *o*-hydroxy-, reactions of, A., 354, 1377.
*iso*Benzylidenedihydrobrucine, and its methiodide, A., 996.
Benzylidenedi-(*p*-methoxyacetophenone), *o*-hydroxy-, A., 354.
4:6-Benzylidene-2:3-dimethyl- α -methylaltroside, A., 1225.
 $\alpha\gamma$ -Benzylidene- $\beta\delta\epsilon$ -diisopropylidene-*d*-sorbitol, A., 325.
9-Benzylidenefluorene, 2-nitro-, and its dibromide, A., 1488.
4:6-Benzylideneglucose, benzoates of, A., 199.
Benzylidene cyclohexane epoxide and iodo-hydrin, A., 1240.
Benzylidenemalonic acid, *m*-nitro-, esters, A., 212.
4:6-Benzylidene- α -methylaltroside, A., 1225.
4:6-Benzylidene- α -methylglucoside 3-benzoate 2-*p*-toluenesulphonate, A., 964.
4:6-Benzylidene-2-methyl- α -methylaltroside, and its derivatives, A., 1225.
4:6-Benzylidene-3-methyl- α -methylaltroside, A., 1225.
 $\beta\delta$ -Benzylidene- ζ -methyl-*d*-sorbitol α -*p*-toluenesulphonate, A., 1104.
 α -Benzylidene- β -*o*-nitrobenzylidenepropionic acid, A., 211.
 β -Benzylidene- α -*o*-nitrobenzylidenepropionic acid, A., 211.
Benzylidene-2:5-dinitro-*p*-toluidine, A., 76.
Benzylidenenitrotoluidines, and *p*-nitro-, A., 76.
Benzylidenepropiophenone, addition of, to magnesium methyl iodide, A., 1125.
 $\alpha\gamma$ -Benzylidene- ϵ -*iso*propylidene-*d*-sorbitol, A., 325.
Benzylidenepyruvic acid, 3:4-dihydroxy-, A., 981.
Benzylidene-*d*-sorbitol, constitution of, A., 325, 1104.
 $\alpha\zeta$ -*di*-*p*-toluenesulphonate, and its derivatives, A., 1104.
 $\beta\delta$ -Benzylidene-*d*-sorbitol, A., 1104.
d-Benzylidenetartaric acid, derivatives of, A., 67.
Benzylidene-*p*-toluidine, 2:4-dinitro-, A., 502.
Benzylidenetriptamine, A., 499.
3:5-Benzylidene-*l*-xylofuranose, and its derivatives, A., 325.
2-Benzyliminocamphane-10-sulphonic acid, A., 1246.
Benzyliminodi-*p*-anisylmethane, detection of sulphur with, A., 184.
1-Benzylindole-2:3-dicarboxylic acid, and its dimethyl ester, A., 1252.

- Benzylmalonic acid, ethyl ester, condensation of, with ethyl fumarate, A., 977.
- Benzylmethacetic acid. See α -Benzylpropionic acid.
- 4-Benzylmethylaminobenzophenone, A., 1241.
- 3-Benzyl-4-methylcoumarin, 6-chloro-7-hydroxy-, A., 1504.
- Benzylmethyldiethylarsonium picrate and styphnate, A., 738.
- Benzylmethylglyoxime, compounds of, with palladium, A., 752.
- Benzylmethylpropionic acid. See β -Benzyl-*n*-butyric acid.
- α -Benzyl- α -*p*-nitrobenzylmalonic acid, ethyl ester, A., 488.
- 4-Benzylacetophenone, 2-hydroxy-, A., 90.
- 5-Benzylacetophenone, 2-hydroxy-, and its benzoyl derivative, A., 1129.
- m*-Benzylbenzaldehyde, A., 1497.
- 3-Benzylbenzaldehyde, 6-nitro-, and its derivatives, A., 1385.
- 4-Benzylbenzaldehyde, 2-hydroxy-, A., 1128.
- α -Benzylbenzanilide, A., 483.
- 4-Benzyl-3-benzylacetophenone, 2,6-dihydroxy-, A., 90.
- 4-Benzylbenzaldehyde, A., 1128.
- 1-Benzyl-2- β -bromoethoxybenzene, A., 1361.
- 1-Benzyl-3- and -4- β -bromoethoxybenzenes, A., 1361.
- 5-Benzylcinnamic acid, 2-nitro- α -amino-, α -benzoyl derivative, A., 1385.
- 5-Benzylcoumarone-1-carboxylic acid, and its methyl ester, A., 1128.
- 5-Benzylxydibenzoylmethane, 2-hydroxy-, A., 1129.
- 1-Benzyl-2- β -diethylaminoethoxybenzene, and its hydrochloride, A., 1361.
- 1-Benzyl-2- and -3- β -dimethylaminoethoxybenzenes, and their hydrochlorides, A., 1361.
- 1-Benzyl-4- β -dimethylaminoethoxybenzene hydrochloride, A., 1361.
- 7-Benzylxyflavanone, A., 1129.
- 6-Benzylxyflavone, A., 1129.
- 7-Benzylxyflavone, A., 1129.
- α -Benzylmercuri- β -methoxy- β -phenylethane, A., 1515.
- 4-Benzyl-6-methoxybenzaldehyde, 2-hydroxy-, A., 1128.
- 5-Benzyl-3-methoxycoumarone-1-carboxylic acid, and its methyl ester, A., 1128.
- 7-Benzyl-4'-methoxyflavanone, A., 1129.
- 7-Benzyl-4'-methoxyflavone, A., 1129.
- 7-Benzyl-5-methoxy-2-methylchromone, A., 90.
- 1-Benzyl-2- β -methylaminoethoxybenzene, and its hydrochloride, A., 1361.
- 7-Benzyl-2-methylchromone, A., 90.
- Benzylxyphenyl β -diethylaminoethyl ether, and its chloro-derivatives, (P.), B., 1132.
- m*-Benzylxyphenylacetic acid, A., 1497.
- 4-Benzylxyphenyl 4-benzylxystyryl ketone, 2-hydroxy-, A., 1129.
- 4-Benzylxyphenyl 3:4-dibenzylxystyryl ketone, A., 1129.
- 4-Benzylxyphenyl *p*-methoxybenzyl ketone, 2-hydroxy-, A., 91.
- 4-Benzylxyphenyl 4-methoxystyryl ketone, 2-hydroxy-, A., 1129.
- 4-Benzylxyphenyl 3:4-methylenedioxybenzyl ketone, 2-hydroxy-, A., 91.
- 4-Benzylxyphenylstyryl ketone, 2-hydroxy-, A., 1129.
- 10-Benzylxyphyllorythrin, A., 1383.
- 7-Benzyl-2-styrylchromone, A., 90.
- 5-Benzylxytoluene, 2-nitro-, A., 1385.
- 1-Benzylcyclopentane, 2-bromo-, A., 977.
- 2-Benzylcyclopentaneacetic acid, A., 977.
- γ -Benzylpentane- β -diol, A., 199.
- 2-Benzylcyclopentane-1-malonic acid, and its ethyl ester, A., 977.
- 1-Benzylcyclopentanol, Raman spectrum of, A., 146.
- 2-Benzylcyclopentanol, A., 977.
- 2-Benzylcyclopentanone, and its semicarbazone, A., 977.
- Δ^1 -Benzylcyclopentene, synthesis of, A., 146.
- Raman spectrum of, A., 146.
- 2-Benzylcyclopentylidene-1-acetic acid, α -cyano-, ethyl ester, A., 977.
- Benzylphenanthrenes, A., 622.
- 4-Benzylphenol, 2-amino-. See Diphenylmethane, 3-amino-4-hydroxy-.
- 4-Benzyl-*Bz*-1-phenylbenzanthrone, A., 1124.
- α - α' -Benzyl- γ' -phenylcarbamido- β - α' -*p*-methoxybenzyl- γ' -phenylcarbamidoethane, A., 1119.
- α - α' -Benzyl- γ' -phenylcarbamido- β - γ' -phenylcarbamidoethane, A., 1119.
- β -Benzylpropane, *l*- α -bromo-, A., 1121.
- α -Benzylpropionic acid, *l*-ethyl ester, A., 1121.
- derivatives, configurative relationship of, to derivatives of phenylethylmethyl-, methylheptyl-, and methyl-octyl-acetic acids, A., 1121.
- d*- α -Benzylpropionic acid, A., 1121.
- d*- β -Benzyl-*n*-propyl alcohol, A., 1121.
- 2- α -Benzyl-*n*-propyl 3:5-diethylpyridine, A., 628.
- 2-Benzylpyridine, photochemistry of, A., 366, 990.
- 9-Benzyl-3:4-pyridino-7:8:9-triazole, and its hydrochloride, A., 993.
- Benzylpyridinium bromide, *p*-hydroxy-, benzoyl derivative, A., 207.
- 1-Benzylpyrrolidine, 1- α -amino- and -nitro-, A., 873.
- 1-Benzylpyrrolidone, and α -amino- and -nitro-, A., 873.
- 1-Benzylpyrrolid-2-one, 1- α -amino-, and its derivatives, A., 635.
- 3-hydroxy-1- α -nitro-, A., 764.
- α -nitro-, A., 635.
- 5-Benzylquinoline, 8-hydroxy-, synthesis of, and its sulphate, A., 1379.
- Benzylisoquinolines, synthesis of, under physiological conditions, A., 357, 1379.
- Benzylisoquinolinium bromide, perchlorate, and picrate, A., 1131.
- Benzylsuccinamic acid, α -nitro-, derivatives of, A., 1387.
- 3-Benzyl-3:4:5:6-tetrahydronorharman hydrochloride, A., 224, 1388.
- 3-Benzyl-3:4:5:6-tetrahydronorharman, 3-*m*- and -*p*-hydroxy-, and their hydrochlorides, A., 1389.
- 3-Benzyl-3:4:5:6-tetrahydronorharman-3-carboxylic acid, A., 1388.
- 3-Benzyl-3:4:5:6-tetrahydronorharman-3-carboxylic acid, 3-*m*- and -*p*-hydroxy-, A., 1389.
- 1-Benzyl-1:2:3:4-tetrahydrophenanthrene, 1-hydroxy-, A., 622.
- Benzylthiol-*d*- and -*l*-altroses, A., 1355.
- β -Benzylthioethylmalonic acid, A., 1486.
- β -Benzylthiol- β -phenylpropionic acid, methyl ester, A., 975.
- β -Benzylthiol- β -phenylpropionophenone, A., 975.
- Benzyltoluidines, nitro-, rate of reaction of, with benzyl bromide, A., 335.
- Benzyltriazine, aminohydroxy-, A., 1254.
- salts, A., 1255.
- di*hydroxy-, and its salts, A., 225.
- Benzyltrimethylstibonium picrate mercurichloride, A., 738.
- Benzylvinylmalonic acid, ethyl ester, A., 975.
- Benzylxylan, A., 331.
- Berberine, synthesis of compounds with ring-system of, A., 875.
- derivatives, absorption spectra of, A., 99.
- Bergapten, and its derivatives, synthesis of, A., 986.
- Beriberi, studies of nervous system in, A., 1429.
- calcium in, A., 107.
- experimental, in relation to oxyzatoxin, A., 1174.
- human, treatment of, with vitamin-B₁, A., 1429.
- Berries, influence of treatment on vitamin-C in, B., 428.
- Berteroa incana*. See Cress, grey.
- Berthollides, crystal structure of, A., 571.
- Beryl, green and yellow, absorption and refraction of light by, A., 1100.
- Beryl-molybdenite of Colorado, A., 725.
- Beryllium, and its isotopes, at. wt. of, A., 5.
- atom scattering factor of, A., 16.
- atomic wave function of, A., 912.
- isotopes, masses of, A., 1051.
- radioactivity of, A., 6.
- nuclear structure of, A., 560.
- nuclear energy of, A., 1443.
- nuclear transformations of, A., 910.
- nuclear photo-effect in, A., 1186.
- production of, (P.), B., 909.
- electrolytically, (P.), B., 1148.
- refining of, by vacuum distillation, B., 853.
- spectrum of, A., 135.
- K*-X-ray spectrum of, A., 138.
- line spectrum of, A., 1.
- ionisation potential of, A., 136.
- radioactivity of, A., 6, 141.
- neutron emission from, A., 802, 1296.
- under deuteron bombardment, A., 143, 1049.
- under bombardment with polonium α -rays, A., 276.
- by hard X-rays, A., 142.
- absence of β -ray activity from, A., 1185.
- disintegration of, by deuterons, A., 1297.
- by γ -rays, A., 141, 277.
- transformation of, by rapid protons, A., 277.
- self-consistent field for, A., 912.
- crystal structure of, A., 1450.
- cementation of iron alloys with, B., 331.
- Beryllium alloys, A., 291.
- with aluminium, (P.), B., 66, 461.
- with copper, B., 458.
- lattice distortion in, A., 816.
- with copper, with iron, and with nickel, A., 926.
- with copper and tin, A., 1066.
- with iron, A., 816.
- Beryllium compounds, production of, from minerals, (P.), B., 494.
- Beryllium boride, action of phosphoric acid on, A., 50.
- carbide, crystal structure of, A., 17.
- fluoride, vitreous, structure of, A., 285.
- nitrate, solubility of, in aqueous nitric acid, A., 934.
- nitride, phosphorescent, A., 1446.
- monoxide, band spectrum of, A., 805.
- magnetic properties of mixtures of chromic oxide and, A., 440.
- sulphate, equilibrium of, with sulphuric acid and with water and sulphuric acid, A., 1322.

- Beryllium determination and separation**:—
determination of, volumetrically, A., 837.
with 8-hydroxyquinoline, A., 1216.
in double silicon fluorides, volumetrically, A., 1093.
determination and separation of, A., 1216.
separation of, from aluminium, A., 597.
- Beryllium ores**, decomposition of, (P.), B., 1142.
- Berzeliite**, crystal structure of, A., 571.
crystal structure and m.p. of, A., 1451.
- Betaine flavianate**, A., 639.
- hydrochloride, hydrolysis of, in aqueous solution, A., 582.
- Betaines**, A., 331.
structure of, A., 1064.
formation of, and their constitution, A., 368.
and related compounds, physical chemistry of, A., 1447.
dielectric constants and apparent molal volume of, A., 1447.
thermal decomposition of, A., 478.
- α -Betaines, aliphatic, effect of chain-length on taste of, A., 656.
- Betainic acid**. See α -Trimethylammonioacetic acid.
- Betula alba**, glucoside from, A., 1110.
- Betuligenol**, and its derivatives, A., 1110.
- Betuloside**, and its aglucone, A., 1110.
- Beverages**, use of rubber in manufacture of, B., 563.
cereal products for, (P.), B., 827*.
preservation of, (P.), B., 173.
aerated, manufacture of, (P.), B., 972.
alcoholic, production of, from citrus fruits, B., 284, 1017.
from fruit juices, B., 569.
determination in, of methyl alcohol, B., 424.
carbonated fruit juice, manufacture of, (P.), B., 252.
bottling of, B., 251.
cereal, production of, (P.), B., 173.
fermented, manufacture of, (P.), B., 284, 520.
use of honey in, B., 1017.
African native, B., 695.
Rumanian, from sour apples, B., 780.
- Bilberry juice**, detection of, in wines, B., 744.
- Bile**, secretion of, effect of diathermy on, A., 1147.
effect of histamine on, A., 648.
effect of "octinum" on, A., 116.
effect of loss of, on blood, A., 887.
substance from, with properties of "substance P," A., 234.
sugar content of, A., 106.
 η of, in relation to gallstone formation, A., 384.
volume and constitution of, in scurvy, A., 1150.
in thyroid diseases, A., 384.
of cats and snakes, taurocholic acid in, A., 1147.
dog's, effect of viosterol on calcium in, A., 793.
infant's, bilirubin in, A., 235.
liver, influence of bile acid on excretion of salts in, A., 512.
 α -, detoxifying action of, A., 648.
pig's, 3-hydroxy- δ -ketoallocholic acid from, A., 773.
snake's, bile acid of, A., 378.
analysis of, A., 512.
- Bile acids**, A., 213, 620, 1236.
optical properties of, A., 976.
stereochemistry of, A., 857.
- Bile acids**, sodium salts, assay of preparations of, B., 477.
synthesis of compounds related to, A., 74, 752.
formation of derivatives of, from genin of sapogenins, A., 1126.
crystal structure of hydrocarbons from, A., 286.
precursors of, in the organism, A., 1407.
effect of, on calcium metabolism, A., 1158, 1531.
and carbohydrate metabolism, A., 111, 390.
conjugated, synthesis of, A., 1237.
- Bile pigments**, A., 363, 632.
constitution of, A., 631, 994.
formation of, from haemin, A., 884.
detection of, in urine by methylene-blue, A., 1268.
- Bile salts**, relation of sex to susceptibility to, A., 526.
effect of intraspinal usage of, on nervous system, A., 1411.
determination of, in body-fluids, A., 234.
- Bilirubin**, and its azo-dyes, constitution of, A., 994.
in bile of newborn infants, A., 235.
in xanthochromic cerebrospinal fluid, A., 1005.
in catarrhal icterus, A., 650.
in icteric sera, A., 776.
in serum of vertebrates, A., 103.
acid, colloidal solutions of, A., 235.
indirect, of serum, extraction of, by chloroform, A., 230.
serum-, determination of, colorimetrically, A., 1200.
detection of, in urine, A., 235.
determination of, in blood, by the diazo-method, A., 999.
in serum, A., 103, 880.
in serum containing haemoglobin, A., 508.
- Bilirubinoids**, synthesis of, A., 363, 632.
- Binding agents**, hydraulic, and their application, B., 631.
pulverulent, production of, (P.), B., 1097.
- Bindone**, alkylation of, A., 623.
- Bindweed**, field, control of, B., 690.
- Bio-catalysis**, A., 1023.
- Biological experiments**, conditioning of chloramine-treated water for, B., 528.
- Biological fluids**, deproteinisation of, A., 773.
determination in, of bases, by electro-dialysis, A., 230.
of bile salts, A., 234.
of pH , A., 134.
of potassium, A., 134.
isolation and determination of volatile substances in, A., 1552.
- Biological objects**, X-ray spectrographic structure of, A., 231.
- Biological oxidation**. See under Oxidation.
- Biological powders**. See under Powders.
- Biology**, borders of, A., 651.
effect of rays in, A., 1123.
lyophilic colloids in, A., 445.
- Bios**, A., 405.
formation and distribution of, A., 898.
distribution of, in animal tissues and tumours, A., 1165.
action of, on putrefactive processes, A., 788.
- Biosterol**, and its derivatives, A., 414.
properties of, and its derivatives, A., 1176.
convulsions due to excessive usage of, A., 129.
See also Vitamin-A.
- Biotite**, preparation of, A., 602.
- Biotite-pyroxenite**, genesis of, A., 1477.
- Birch trees**, oil in, A., 269.
paraffin in oil of buds of, A., 672.
- Birds**, origin of colour in feathers of, A., 233.
fixation of potassium by, A., 1523.
- Bis-2-aceto-*p*-chloro-*o*-nitrophenylamido-phenyl disulphide**, A., 1511.
- Bis-(3-acetoxy-4-methoxybenzylidene)di-ketopiperazine**, A., 489.
- pp'*-Bis-(2,6-diaminopyridine-3-azo)di-phenyl sulphide**, A., 1360.
- Bisanhydro- β -carotenone**, A., 612.
- 3,3'-Bis(azo-2,6-diaminopyridine)-4,4'-di-hydroxyarsenobenzene**, A., 1139.
- Bisazo-dyes**, symmetrical, separation of chromophores in, A., 338.
- 3,3'-Bis(azo-*m*-phenylenediamine)-4,4'-di-hydroxyarsenobenzene**, preparation and properties of, A., 1139.
- 2,4-Bisbenzeneazophenol**, 3:5:3':5'-*tetra*-bromo- and -*tetrachloro*, A., 1231.
- $\alpha\beta$ -Bishenzhydrylaminoethane, and its derivatives, A., 855.
- Bis-(1-benzoyl-2-naphthyl)carbamide**, A., 336.
- Bis-(1-benzoyl-2-naphthyl)thiocarbamide**, A., 336.
- Bis(benzoyloxy)tropan**, and its salts, A., 98.
- Bis(benzylhexahydrophthalide)**, A., 1246.
- $\alpha\beta$ -Bisbenzylideneaminoethane, reaction of, with Grignard reagents, A., 854.
- Bis-2- and -4-benzylloxyphenyl ethylene ethers**, A., 1361.
- Bis-3-bromocamphor-10-mercury**, A., 755.
- Bis-sec-butyl phosphate**, A., 122.
- Bis-*n*-butylaminoethylaniline**, and its picrate, (P.), B., 940.
- Bis-(6-carboxymethylhomopiperonyl)- β -piperonylethylamine**, A., 875.
- 2,3-Bisdichloroacetyl-4,6-benzylidene- β -methylglucoside**, A., 1225.
- Bis-3-chlorocamphor-10-mercury**, A., 755.
- Bis-2,2'-(1-chloro-1,3-diphenylidene)**, A., 1492.
- Bis-2,2'-(3-chloro-1,3-diphenylidene)**, A., 1492.
- 2,6-Bis-*y*-chloro- β -hydroxypropoxyphenol**, A., 1504.
- Bis-2-*p*-chloro-*o*-nitrophenylaminodiphenyl disulphide**, A., 486.
- NN'*-Bis-(5'-chloro-2'-nitrophenyl)benzidine**, A., 855.
- Bischloronitrophenylcarbamides**, A., 1359.
- Bischloro-4,6-dinitrophenylcarbamides**, A., 1359.
- Biscotarninoacetone**, and its methiodide, A., 1388.
- Biscotarninoisopropyl alcohol**, A., 1388.
- Biscotarnonideneacetone**, A., 1388.
- Biscuits**, flour for. See Flour, biscuit.
- cereal, manufacture of, (P.), B., 523.
cracker, rancidity of, B., 284.
- Bis-1,1'-dehydrothebenones**, A., 368.
- Bis-1,1'-demethoxyde-*N*-methylidihydro-sinomenines**, A., 368.
- 1,5-Bisdemethylatioporphyryr**, A., 1135.
- Bis-1,1'-de-*N*-methylidihydrothebainones**, A., 368.
- Bis-1,1'-de-*N*-methyltetrahydrothebainone**, A., 368.
- Bis-1,1'-deoxodemethoxydihydrosinomenine**, and its salts, A., 1138.
- meso*-"Bisdibenzoylthane-A." See *meso*- $\gamma\delta$ -Dibenzoyl- $\alpha\zeta$ -diphenyl-*n*-hexa- $\alpha\zeta$ -dione.
- "*cyclo*Bisdibenzoylthanes." See 2,3:4-Tribenzoyl-1-phenylcyclopentan-1-ols.
- "Bis-1,2-dibenzoylthylene." See $\gamma\delta$ -Dibenzoyl- $\alpha\zeta$ -diphenylhexadiene- $\alpha\zeta$ -dione.

- Bis- β -diethylaminoothylaniline, (P.), B., 940.
- NN'*-Bis- β -diethylaminoethyl-*m*-phenylenediamine, (P.), B., 940.
- Bisdiethylantimony, A., 603.
- Bisdiethylcarbamate acid, isopropyl ester, A., 1483.
- Bis-(3,4-dimethoxy- ω -nitrostyrene), A., 1498.
- 5:5'-Bisdimethylamino-2:2'-dimethyloxacarbocyanine iodide, manufacture of, (P.), B., 783.
- 5:12-Bis-*p*-dimethylaminophenylchromanorufan, A., 1504.
- Bisdimethylantimony, A., 603.
- Bisdimethylbismuth, A., 603.
- Bisdimethylglyoximediamicobaltic salts, configuration of, A., 51.
- 2:5-Bisdiphenylaminoterephthalic acid, and its salts, A., 992.
- Bisdiethylene-ethylone, 2:2'-difluoro-, A., 1115.
- Bisdiphenylneopinecolin, β -isomeride of, and its derivatives, A., 341.
- 3:3'-Bis-(2:5-diphenylfuran), A., 1500.
- Bis-2:2'-(1:3-diphenylinden-3-ol), A., 1492.
- Bisdiphenyl oxides, production of, (P.), B., 716.
- 3:3-Bis-3':3''-diphenylisatin 5:5''-dibromo- and 5:5''-dinitro-6:6''-dihydroxy-, production of, (P.), B., 444.
- Bisglyoxalone, A., 1126.
- Bis- β -halogenoethylamines, A., 629.
- Biscyclohexyl phosphate, A., 122.
- 2:3:2':3'-Bis- α -hydroxytrimethylene-4:4'-bisdihydroquinazolinyl. See Vasicine.
- α -Bis-(3-methoxy-4-ethoxyphenyl)- α -methylbutan- β -one, and dinitro-, A., 485.
- Bis-(β -methoxyethyl)methylene ether, manufacture of, (P.), B., 619.
- Bis-(4-methyl-5-carbomethoxy-3- α -dicarboxyethylpyrrol)-2-methane, A., 363.
- 6:7:3':4'-Bismethylenedioxy-2-carbamyl-6'-methoxymethyl-1:2:3:4-tetrahydroprotopapaverine, A., 875.
- 4:5:4':5'-Bismethylenedioxy-1:1'-diethyl-7:7'-endodimethenylthiocarbocyanine *p*-toluenesulphonate, (P.), B., 842.
- 4:5:4':5'-Bismethylenedioxy-1:1'-diethyl-7:7'-*o*-phenylenethiocarbocyanine *p*-toluenesulphonate, (P.), B., 842.
- 4:5:4':5'-Bismethylenedioxy-1:1'-dimethyl-7:7'-endodimethenylthiocarbocyanine *p*-toluenesulphonate, (P.), B., 842.
- 4:5:4':5'-Bismethylenedioxy-1:1'-dimethyl-7:7'-*o*-phenylenethiocarbocyanine *p*-toluenesulphonate, (P.), B., 842.
- 6:7:3':4'-Bismethylenedioxy-8:6'-methylene-protolaudanosine methobromide, and its derivatives, A., 875.
- 6:7:3':4'-Bismethylenedioxy-8:6'-methylene-1:2:3:4-tetrahydroprotopapaverine, and its *p*-nitrobenzoyl derivative, A., 875.
- 6:7:3':4'-Bismethylenedioxy-2- and -6'-methyl-1:2:3:4-tetrahydroprotopapaverines, and their picrates, A., 875.
- pp'*-Bis- α -methylhydrazinotriphenylmethyl hydrogen sulphate, A., 1367.
- Bismocite from South Africa, A., 956.
- Bismuth, separation of, from copper, (P.), B., 504.
- spectrum of, A., 424.
- energy levels in, A., 1292.
- absorption band spectrum of, and of its mixtures with antimony, A., 555.
- l*-X-ray spectrum of, A., 676.
- artificial radioactivity of, A., 559.
- free path of metal electrons in, A., 434.
- diffraction of slow electrons by, and its inner potential, A., 1309.
- Bismuth, potential of, A., 169, 585.
- effect of magnetic field on conductivities of, A., 154, 1062.
- ionised, spectrum of, A., 1184.
- isoelectric sequence in, A., 2.
- and its alloys, application of Bloch theory to, A., 153.
- crystals, reflexion of X-rays from, A., 16.
- conductivity of, A., 567.
- magnetostriction in, A., 19, 813, 1195.
- and its alloys, A., 153.
- thermal expansion of, A., 21, 156.
- thermal resistance of, at low temperatures, A., 20.
- size and arrangement of, formed from vapour, A., 1195.
- segregation of polonium in, A., 1440.
- effect of, on copper, B., 231.
- explosive reaction of, with perchloric acid, A., 834.
- removal of, from lead, (P.), B., 156.
- sterilisation of B.P. injection of, B., 605.
- assay of National Formulary pharmaceutical preparations of, B., 973.
- poisoning by. See under Poisoning.
- injection of, and its elimination, A., 119.
- resorption of, from the gastro-intestinal tract, A., 657.
- effect of preparations of, on renal cells, A., 1021.
- tervalent, diamagnetism of, A., 1453.
- Bismuth alloys with cadmium, physical constants of, A., 693.
- with gold, crystal structure of, A., 1060.
- with lead, superconducting, A., 816.
- with lithium, A., 692.
- with thallium, penetration of magnetic fields into, A., 287.
- with thallium, with cadmium and thallium, and with lead and thallium, A., 576.
- Bismuth salts, production of, from Cottrell dust of sulphuric acid plants, B., 20.
- reactions of, with organic hydrosulphides, A., 1515.
- Bismuth halides, ammonia compounds of, A., 1213.
- hydride, isotope effect in, A., 805.
- band spectrum of, A., 1051.
- triiodide, photo-dissociation of, A., 682, 807.
- equilibrium of, with ammonium iodide, A., 1077.
- with potassium iodide and water, A., 36.
- with sodium iodide and water, A., 825.
- compounds of, with antipyrine, pyrimidone, and hexamethylenetetramine, B., 123.
- kurchi, action of, on tissue culture cells, A., 1161.
- nitrate, plasticity of, A., 1062.
- sesquioxide, photo-electric distribution curve for, A., 682.
- oxyhalides, crystal structure of, A., 920.
- Bismuth organic compounds, manufacture of, (P.), B., 524.
- with tartaric acid, A., 608.
- oil-soluble, manufacture of, and their use as bactericides, (P.), B., 701.
- Bismuth trimethyl, Raman spectrum of, A., 681.
- triphenyl dichloride, crossed axial plane dispersion in, A., 810.
- Bismuth detection and determination:—
- analysis of, by means of selenious acid, A., 1339.
- detection of, A., 1096.
- microchemically, A., 838.
- Bismuth detection and determination:—
- detection of, with organic reagents containing sulphur, A., 721.
- determination of, with 8-hydroxyquinoline and potassium iodide, A., 720.
- as oxydide, A., 1474.
- potentiometrically, A., 185.
- in copper, B., 678.
- in electrolytic copper, spectrographically, A., 1096.
- Bismuth-violet, therapeutic value of, A., 516.
- Bismuthiol, reactions of, A., 1515.
- Bismuthiodides, detection of, with cyclic nitrogen bases, A., 1474.
- Bismuthytartaric acid, action of ammonia on, A., 608.
- 8:8'-Bis-6-nitro-1:3-benzodioxin, A., 627.
- NN'*-Bis-*m*-nitrobenzhydrazide, and its derivatives, A., 743.
- Bis-4-nitro-2:5-dimethylphenylcarbamide, A., 1360.
- Bis-4:6-dinitro-2:5-dimethylphenylcarbamide, A., 1360.
- ON*-Bis-2:4-dinitrophenyl- α -aminophenol, A., 1491.
- Bis-6-nitro-*m*-tolylcarbamide, A., 1359.
- Bis-4:6-dinitro- α -tolylcarbamide, A., 1359.
- Bis-6-nitro- α -tolyl-*N*-ethylcarbamide, A., 1360.
- α -Bisnorcholanic acid, α -3-hydroxy-, and its acetate and methyl ester, A., 1495.
- Bisnorallocholanic acid, 3-hydroxy-, and its acetyl derivative, and their derivatives, A., 215, 216, 1370.
- Δ^1 -Bisnorallocholanic acid, Δ^2 -3-hydroxy-, A., 1364.
- Bisnorepicopropane-3:23-diol, and its acetate, A., 1495.
- Bisnorlithocholic acid. See α -Bisnorcholanic acid, α -3-hydroxy-.
- 3:6-Bispendantamethylene-2:5-dimethyl-3:6-dihydropyrazine, A., 858.
- Bis-2:2'-(1-phenylindan-3-on-1-ol), A., 1492.
- Bis-2:2'-(1-phenylinden-3-one), A., 1492.
- N*-Bis-(*N'*-phenylpiperazyl)methane, and its tetrahydrobromide, A., 358.
- $\alpha\beta$ -Bis-(α -phenylpropylamino)ethane, and its derivatives, A., 855.
- Bisphenylthiocarbamide, reaction of bismuth salts with condensation products of, A., 1136.
- Bispyrimidine, thioltrihydroxy-, A., 763.
- 1- β -Bis-(8'-quinolymethyl)aminoethylpiperidine, A., 1506.
- Bis-(8-quinolymethyl)- β -diethylaminoothylaniline, A., 1506.
- δ -Bis-(8-quinolymethyl)dimethylethylenediamine dihydrobromide, A., 1506.
- 1:4-Bis-(8'-quinolymethyl)piperazine, A., 1506.
- Bis-1:1'- β -tetrahydrodeoxycodine, and its methiodide, A., 1138.
- dl*-Bis-1:1'- β -tetrahydrodeoxycodine, A., 1138.
- Bis-1:1'-thebenones, A., 368.
- δ -Bis-*p*-thiocyanophenylcarbamide, A., 1488.
- δ -Bis-*p*-thiocyano- α -tolylcarbamide, A., 1488.
- Bisriazolo-*p*-benzoquinone, and its sodium salt, A., 1509.
- Bitumen, treatment of, (P.), B., 260, 936.
- colour of, B., 437.
- viscosity-temperature characteristics of, B., 1029.
- measurement of surface tension of, B., 885.
- manufacture of aqueous dispersions of, (P.), B., 616.
- emulsions. See under Emulsions.
- impregnation of felt with, (P.), B., 351.

Bitumen, manufacture of coloured extruded products of, (P.), B., 320.
production of compositions of rubber and, (P.), B., 1083.
mixtures of tar and, for roads, etc., (P.), B., 662.
for roads, viscosity of, B., 1028.
asphalt, surface tension of, B., 933.
plastic properties of, B., 791.
bituminous-coal, temperature-surface tension curves of, B., 1124.
coal, B., 53, 131.
extraction of, with dioxan and xylene, B., 580.
golatinised, B., 85.
oxidised, B., 1080.
Bituminous binders, adhesion of, to stone, B., 62.
coatings. See under Coatings.
compositions, containing rubber, (P.), B., 111.
dispersions, aqueous, manufacture of, (P.), B., 394.
emulsions. See under Emulsions.
materials, apparatus for carbonisation of, (P.), B., 982.
melting of, (P.), B., 711.
cracking of hydrocarbon oils and, (P.), B., 214.
cracking and coking of mixtures of hydrocarbon oils and, (P.), B., 180.
adhesion of minerals and, in roads, B., 675.
use of, in under-water paints, B., 1054.
for roads, (P.), B., 727.
manufacture of, (P.), B., 758.
waterproofing against underground water with, in Berlin subways, B., 1054.
light-coloured, for pavements and roads, (P.), B., 1144.
minerals. See under Minerals.
paving mixtures, testing of, (P.), B., 903.
rocks. See under Rocks.
surfaces, for roads, pavements, etc., (P.), B., 675.
Biuret reaction, theory of, A., 1110.
Biza orellana, pharmacologically valuable constituents of, A., 267.
Bixin, preparation of, A., 1244.
Black ash, smelter for, (P.), B., 590.
Black tongue in dogs, effect of yeast extracts in, A., 649.
Blackberries, acid from, A., 1352.
Blackbirds, female, effect of testicular hormone on plumage and eye-colour of, A., 1426.
male, effect of theelin and thyroxine on plumage and eye-colour of, A., 1426.
Blackcurrants. See under Currants, black.
"Blackfellow's bread," A., 1042.
Blackness sill, Thomsonised inclusion from, A., 1100.
Bladder, mineral elements in muscle, uterus, and, A., 511.
Blasting caps, (P.), B., 526.
ignition composition for, (P.), B., 1024.
Bleaching, history of processes for, B., 945.
with hydrogen peroxide, aluminium vessels for, B., 301.
with non-aqueous liquors, (P.), B., 353.
of cellulose, (P.), B., 847.
by irradiation, B., 541.
of cellulose fibres, (P.), B., 59, 224, 1140.
of cellulose nitrate, (P.), B., 1140.
of cotton knitted goods, loss of weight in, B., 1041.
of horse hair and hog bristle, B., 800.
of montan wax, (P.), B., 1127.

Bleaching of pulp, B., 222, 449; (P.), B., 19, 668.
apparatus for, (P.), B., 97.
of pulp and lignified materials, (P.), B., 668.
of paper pulp, B., 95; (P.), B., 266, 987.
of textiles, B., 1090.
of vegetable fibres, (P.), B., 1042.
of waxes, (P.), B., 912.
of wood pulp, B., 95; (P.), B., 624.
of chemical wood pulps, B., 1136; (P.), B., 97.
of wool with hydrogen peroxide, B., 669.
sulphur, of woollen fabrics, B., 846.
Bleaching agents, manufacture of, (P.), B., 620.
corrosion of copper and copper-nickel alloys by, B., 27.
Bleaching powder, constitution and formation of, A., 1214.
manganese in, B., 589.
Bleaching solutions, production of, from chloride of lime, B., 99.
influence of light on stability of, B., 800.
Bleeding, heavy, arrest of, by vitamin-C, A., 644.
Blende, roasting of, (P.), B., 414.
diffraction of electrons by, A., 434.
inner potential of, A., 570.
at Vallauria, A., 601.
detection in, of germanium, A., 838.
Blindness in cattle, of nutritional origin, A., 1525.
Blocks, self-lubricating, (P.), B., 290.
Blood, A., 999.
action of mineral water on composition of, A., 1161.
arterialisation of, A., 371, 878.
carbohydrate metabolism in insufficient circulation of, A., 1008.
physical chemistry of, A., 230.
during narcosis, A., 893.
effect of short-wave application on composition of, A., 1517.
effect of X-rays on, A., 375.
magnetic properties of, A., 372.
relation of volume of, to internal secretions, A., 1423.
effect of ethyl and methyl alcohols on pressure of, A., 655.
effect of high-protein diet on pressure of, in hypertony, A., 1013.
effect of specific substances on pressure of, A., 1019.
action of pituitary extracts and of insulin on viscosity of, A., 259.
colloid-osmotic pressure of, A., 517.
relation between proteins and, A., 642.
coagulation of, A., 771, 881, 1262.
as a chain reaction, A., 1002, 1143.
anticoagulant action of azo-dyes in, A., 104.
calcium metabolism in, A., 881, 1263.
effect of folliculin on, A., 1519.
effect of aromatic guanidine derivatives on, A., 528.
effect of hormones on, A., 666.
inhibition of, by metals, A., 375.
influence of moranyl compounds on, A., 1263.
effect of nicotine on time of, A., 881.
anticoagulating action of salts in, A., 104.
effect of sodium citrate on, A., 771.
coagulant for, from ox-lung, A., 644.
deproteinisation of, by mercury and cadmium nitrates, A., 1000.
for sugar determination, A., 230.
acetylcholine-destroying power of, A., 1279.
bactericidal power of, A., 1170.
glycolysis in, A., 1392.

Blood, glycolysis in, effect of halogenated acids on, A., 373.
phosphoric esters in, A., 104, 1518.
and phosphate distribution, A., 1001.
sugar disappearance and lactic acid formation in, A., 509.
decrease of glycolysis and increase of phosphorus in, after fatigue, A., 239.
effect of vitamins on lipolysis in, A., 792.
effect of fluorides on, A., 531.
effect of pectin on, A., 879.
action of monophosphate on, in physical work, A., 239.
effect of suppression of renal function on, A., 518.
effect of salt in diet on, A., 642.
effect of sodium chloride deficiency on, A., 892.
variations in composition of, A., 508.
effect of pituitary on mineral composition of, A., 643.
effect of sinus blockage on constituents of, A., 1158.
influence of thyrotropic hormone on constituents of, A., 790.
acid-base balance of, as result of gastric secretion, A., 378.
effect of histamine on, A., 512.
effect of sodium chloride on, A., 524.
adrenaline in, in relation to sugar, A., 900.
effect of adrenaline on exchange of sugar between muscle and, A., 127.
albumin of. See under Albumin.
alkali reserve and fat content of, A., 103.
effect of acetates and citrates on alkaline reserve and pH of, A., 530.
amino-acids in, after resection of colon, A., 1261.
effect of glucose on amino-nitrogen of, A., 1393.
origin of ammonia in, A., 642.
formation and content of ammonia in, A., 103.
ammonia in, after introduction of urease, A., 508.
control of liver function by, A., 654.
arginine in, in relation to growth, A., 1014.
effect of activators on, A., 1392.
equilibrium of bromides in cerebrospinal fluid and, A., 881.
effect of injection of serum on calcium in, A., 880.
colloidal calcium phosphate in, A., 1001.
reduction of calcium and magnesium in, in grass tetany, A., 1270.
effect of injections of pregnancy urine on calcium, magnesium, and phosphorus in, A., 542.
action of liver extracts on calcium and phosphorus of, A., 537.
calcium and sugar partition in, in normal and diseased animals, A., 385.
effect of crystalline insulin on residual carbon and lactic acid in, A., 901.
carbon monoxide in, in illness, A., 774.
role of carbamino-compounds in transport of carbon dioxide by, A., 640.
exchange of hydrogen carbonate and chloride ions between corpuscles and serum in, A., 372.
influence of vitamins on catalase in, A., 546.
cholesterol in, effect of irradiation on, A., 532.
influence of age on, A., 642.
action of folliculin on, A., 667.
effect of luteinising hormones on, A., 1174.

Blood, cholesterol in, in hypothyroidism, A., 650.
 control of, by kidneys, A., 230.
 effect of liver diet on, A., 1000.
 in pregnancy and in splenectomy, A., 645.
 effect of prolactin on, A., 667.
 in thyroid disease, A., 395.
 effect of tuberculin on, A., 408.
 cholesterol and iodine in, in relation to hypertension, A., 383.
 cholesterol esterase in, A., 1536.
 choline in, in pallid and florid hypertension, A., 887.
 non-existence of free choline in, A., 508.
 copper in, A., 643.
 creatine and creatinine in, in suppression of renal function, A., 1261.
 creatinine of, A., 373, 1000.
 ethyl alcohol in, and its action on body oxidation, A., 525.
 concentration of, A., 244.
 fat in, in obesity, A., 517.
 fat tolerance in, in malnutrition and obesity, A., 517.
 fatty acids and cholesterol in, following liver injury and splenectomy, A., 523.
 distribution of glucose in, A., 1392.
 effect of water-soluble heavy metal salts on glutathione in, A., 398.
 effect of internal secretions and of pituitary on reduced glutathione in, A., 543.
 effect of glycolysis on glycerol content of, A., 1518.
 inactivation of heparin in, A., 1024.
 physico-chemical state of hormones in, A., 1284.
 testicular hormones in, A., 1032.
 origin and elimination of indoxyl in, A., 373, 374.
 iodine in, A., 1518.
 in relation to basal metabolism, A., 775.
 regulation of, by liver, A., 115.
 action of pituitary extracts on ketone content of, A., 541.
 effect of thyrotropic hormone on ketones in, A., 258.
 ketonic substances in, in hepatectomy, A., 776.
 distribution of lactates between corpuscles and plasma in, A., 880.
 lactic acid in, during injection of glucose, A., 778.
 after hepatectomy, A., 775.
 effect of insulin on, A., 538.
 in liver diseases, A., 516.
 action of posterior pituitary on, A., 790.
 changes in lactic acid, protein, and sugar contents of, A., 1261.
 lead in, A., 781.
 change in lipin content of, passing through lungs, A., 523.
 magnesium in, A., 509.
 manganese in, in nervous diseases, A., 517.
 exchange of mineral matter between corpuscles and plasma in, A., 1142.
 effect of arsenic, phosphorus, and sodium chlorate dosage on residual nitrogen of, A., 120.
 oxalic acid in, A., 640.
 oxygen capacity of, at high altitudes, A., 1260.
 measurement of oxygen content of, flowing through intact vessels, A., 371.
 relation between oxygen content of, and glutathione, A., 1392.
 phosphatase in, A., 534, 1164.

Blood, phosphorus in, A., 374, 1393.
 autolysis of organic phosphorus in, A., 642.
 phosphorus, sodium, and nitrogen exchange in, in renal and thyroid deficiency, A., 108.
 potassium in, after adrenalectomy, A., 1008.
 proteins, effect of administration of colloids on, A., 1394.
 effect of low-protein diet on, A., 1393.
 combination of, with diphtheria- and tetanus-toxins, A., 105.
 pyruvate in, in vitamin-B₁ deficiency, A., 669.
 sugar in, level of, A., 232.
 influence of adrenal cortex on, A., 789.
 effect of adrenaline on, A., 410, 641.
 in hepatectomised and phloridzinised animals, A., 665.
 effect of adrenaline and of copper salts on, A., 1262.
 effect of adrenaline and of sodium bicarbonate on, A., 641.
 effect of blood-pressure on, A., 770.
 effect of carbon dioxide on, A., 1273.
 variations in, in normal and diabetic subjects, A., 1001.
 effect of piqure diabétique on, in adrenalectomy, A., 529.
 in relation to digestive tract, A., 522.
 effect of transplantation of endocrine glands on, A., 1142.
 during exercise, A., 110, 1142.
 with ingestion of glucose, A., 110.
 in fasting, according to sex, A., 509.
 after administration of glucose in children, A., 110.
 effect of hypertonic glucose on, A., 1000.
 at high altitudes, A., 529.
 modifications of, in hyperthermal and radioactive media, A., 247.
 in liver diseases, A., 237.
 effect of papaverine on, A., 642.
 effect of pituitary hormones on, A., 1424.
 effect of ingestion of sugar and starch on, A., 522.
 effect of, on absorption of sugar from intestine, A., 1273.
 action of adrenaline on pressure and sugar in, A., 1031.
 effect of injected eosin on sulphur in, A., 642.
 content of urea in, A., 641.
 significance of low-urea in, A., 1010.
 relation between urea-nitrogen and pressure in, in adrenalectomy, A., 127.
 uric acid content of, A., 514.
 effect of adrenal cortex on vitamin-A in, A., 1173.
 influence of nervous system on vitamin-A in, A., 1034.
 vitamin-C in, after injection, A., 669.
 diazo-reaction of, and its absorption spectrum, A., 1000.
 in allergy, complement in, A., 1396.
 in hypothalamus of cats, regulation of circulation of, A., 530.
 in pregnancy, thyroid hormone in, A., 258.
 transfusion of, A., 652.
 hæmoglobin solutions as substitute for, A., 878.
Blood, of adults, after eleven years egg and milk diet, A., 999.
 of albino rats, effect of diet on thionine of, A., 642.
 alligator's, A., 1392.

Blood, animal, sensitising and preserving substances in, A., 771.
 changes in, according to age, A., 372.
 colouring matter for foods from, (P.), B., 205.
 arterial and venous, glucose in, after injection of ineretin or secretin, A., 538.
 of Australian aborigines and whites, hæmoglobin and solids in, A., 878.
 avian, bovine, and human, determination in, of cholesterol, A., 230.
 bird's, oxygen dissociation curves of, A., 770.
 after eyeball or comb destruction, A., 1001.
 capillary and venous, of infants, chlorine content of, A., 509.
 cardiac, of right and left hearts, fat and lipin in, A., 653.
 of decapitate cats, glucose and non-glucose of sugar in, in hepatic and portal veins, A., 389.
 of cats and horses, A., 642.
 of Uruguay cattle, phosphorus in, A., 642.
 cerebral, in conscious and narcotised men, A., 1516.
 chicken's, calcium distribution in, A., 374.
 of children, glutathione in, A., 508.
 proteins of, A., 879.
 and distribution of total nitrogen, A., 230.
 sugar in, effect of carbohydrate, fat, or protein on, A., 389.
 hormonal regulation of, A., 1283.
 of southern Chinese, calcium in, A., 1393.
 cow's, calcium and magnesium in, in health and disease, A., 230.
 cholesterol and phosphatide content of, A., 373.
 in lactation, effect of fish oils on, A., 773.
 of horseshoe crabs, comparison of copper in, with common copper, A., 643.
 crayfish, regulation of mineral composition of, A., 104.
 of Crustacea. See under Crustacea.
 dog's, surface tension of, and lymph, A., 105.
 changes in, in physical exhaustion, A., 1404.
 sugar in, effect of diverting adrenal-vein blood into portal vein on, A., 127.
 effect of substances of the pilocarpine group on, A., 641.
 dog's and rabbit's, vascular action of, A., 894.
 of Europeans, and of inhabitants of the tropics, pH of, A., 1143.
 from feet, effect of standing on, in relation to œdema formation, A., 385.
 of fish, physical chemistry of, A., 643.
 neutralisation and buffer-coefficient curves of, A., 771.
 of marine fish, colloid osmotic pressure of, A., 1516.
 fetal, carbon dioxide and oxygen in, A., 507.
 exchange of lipins in, A., 890.
 fetal and maternal, after pregnancy, cholesterol in, A., 1392.
 fowl's, A., 1142.
 calcium level in, A., 1262.
 of fasting gizzardectomised fowls, sugar in, A., 1001.
 goat's, glycolysis in, A., 1392.
 fetal and maternal, carbon dioxide balance in, A., 229.

- Blood, guinea-pig's, ketones in, in scurvy, A., 386.**
 hæmolyzed, oxidation and phosphorylation in, in presence of methylene-blue and pyocyanine, A., 1123.
 hon's, composition of, in relation to egg production, A., 374.
 effect of lecithin-perhydrite complex on, A., 526.
 proteins of, in relation to egg production, A., 374.
 effect of protein level of ration on, A., 388.
 hepatic and portal, sugar in, after glucose administration, A., 1392.
 horse's, changes in, after racing, A., 520.
 human, vapour pressure of, A., 879.
 adenine-nucleotide content of, A., 373.
 level of carbonyl compounds in, A., 1518.
 copper and iron in, A., 509.
 depressor substances in, A., 894, 895.
 iodine in, A., 231.
 effect of gases on cerebral flow of, A., 1391.
 effect of parathyroid extracts on, A., 900.
 bactericidal action of, A., 409.
 action of, on meningococcus, A., 1421.
 of human brain veins, oxygen content of, A., 371.
 of open-trachea insects, oxygen and carbon dioxide content of, A., 371.
 of invertebrates, ammonia in, A., 1524.
 anhydrase activity of, A., 102.
 of Koreans, cholesterol in, A., 642.
 maternal, immunity of, and that of placental fluid, A., 1395.
 men's, sugar in, effect of insulin on, A., 901.
 normal and laked, distribution of chloride in, A., 374.
 with nucleated corpuscles and pathological, gelation of, A., 1394.
 of *Orthoptera*, reducing substances and chlorine in, A., 1262.
 pancreatic, sulphur content of, A., 378, 1518.
 pig's, as human food in China, A., 890.
 portal, cat's, acetylcholine-like substance in, A., 244.
 rabbit's, effect of nicotine on coagulation of, A., 881.
 oxygen consumption of corpuscles and plasma of, A., 510.
 ethyl alcohol in, after administration, A., 117.
 lactic acid in, A., 892.
 sugar in, action of papaverine on, A., 1156.
 of rabbits immunised with typhoid bacilli, cholesterol and reduced glutathione in, A., 536.
 rat's, diurnal variation of sugar in, A., 373.
 reptilian, properties of, A., 999, 1392.
 sheep's, distribution of ammonia precursors in, A., 373.
 skate's, effect of adrenaline, histamine, and destruction of spinal cord on, A., 1020.
 snail's, influence of oxygen atmosphere on, A., 371.
 sugar in, A., 373.
 umbilical, of human new-born, p_H of, A., 509.
 of various species, crystallisation of carboxyhæmoglobin in, A., 640.
 choline-esterase activity of corpuscles and serum from, A., 1416.
- Blood, venous, determination in, of p_H , by glass electrodes, A., 104.**
 of pregnant women, phosphoric acid exchange in, A., 237.
 of wrass, fluorescence of blue pigments of, A., 102.
Blood analysis:—
 apparatus for analysis of gases in, A., 507.
 effect of anticoagulants on analysis of, A., 1394.
 detection of, in forensic medicine, A., 640.
 detection in, of barbituric acid derivatives, A., 118.
 of vitamin-A, A., 668.
 determination in, of acetone, A., 104.
 of adrenaline, A., 642.
 of albumoses, amino-acids, and polypeptides, A., 1517.
 of alkali reserve, A., 880.
 of bases, A., 230.
 of bilirubin, A., 999.
 of bromine, A., 104, 375, 643, 881.
 of calcium, A., 1001.
 of residual carbon, A., 674, 1393.
 of carbon monoxide, A., 507.
 of chlorides, A., 1393.
 of chlorine, A., 1142, 1262.
 of cholesterol, A., 230, 880, 1392.
 of cholesterol and fat, gravimetrically, A., 1518.
 of cholic acids, A., 1000.
 of choline, A., 887.
 of creatine and creatinine, A., 103.
 of creatinine, A., 642, 1142.
 of ethyl alcohol, A., 116, 1142.
 of fat, A., 517.
 of total fatty acids, A., 1000.
 of fructose, A., 770, 1001.
 of glucose, A., 1392.
 of gum acacia, spectroscopically, A., 1000.
 of hæmoglobin, A., 102.
 of p_H , with glass electrode, A., 1143.
 of indole, A., 1000.
 of iodine, A., 104, 231.
 burette for, A., 270.
 of iron, A., 1001, 1262.
 of ketonic substances, A., 880.
 of lactic acid, A., 104.
 of lipin-phosphorus, A., 509.
 of methyl alcohol, A., 1044.
 of nitrogen, A., 1142.
 of oxalic acid, A., 390.
 of oxygen, in presence of ether, A., 770.
 of phospholipins, A., 1142.
 of phosphorus, clinically, A., 880.
 with the step-photometer, A., 1001.
 sodium fluoride as anticoagulant in, A., 509.
 of physiologically active substances, A., 123.
 of pressor substances, A., 887.
 of proteins, A., 374.
 of sodium, A., 509, 1044.
 of sugar, A., 373, 509, 1142, 1262, 1392, 1518.
 colorimetrically, A., 104.
 iodometrically, A., 642.
 micro-iodometrically, A., 1000.
 apparatus for, A., 1262.
 in diabetes, A., 775.
 of thioneine, A., 642.
 of urea, A., 1393, 1525.
 in filtrates, A., 1517.
 of uric acid, A., 230, 642.
 of vitamin-A, A., 792.
 of vitamin-C, A., 547.
- Blood-capillaries, effect of calcium and potassium ions on lumen of, A., 530.**
 effect of p_H on lumen of, A., 530.
 permeability of, to proteins, A., 879.
 in man, A., 530.
 resistance of, A., 1011.
Blood-corpuscles, electrophoresis of, A., 1321.
 determination of volume of, A., 372.
 properties of suspensions of, A., 640.
 distribution of proteins between, and plasma, A., 1393.
 red, measurement of, A., 879.
 thickness of wall of, A., 1517.
 relation of diameter and number of, to light-transmission in suspensions, A., 1141.
 volume of, A., 770, 1141.
 reduction of, by fat solvents, A., 507.
 photographic recording of, and their permeability, A., 1260.
 respiration of, A., 235.
 respiratory co-enzyme of, A., 248.
 adsorption by, of adrenaline, A., 790.
 permeability of, to glucose, A., 1391.
 to glycerol, A., 999.
 to potassium, A., 1260.
 to potassium and rubidium, influence of carbon dioxide and lead on, A., 1260.
 sedimentation of, A., 1141.
 effect of narcotics on, A., 525.
 sedimentation rate of, A., 1391.
 suspension stability of, in solutions of gum acacia, A., 372.
 solubility of nitrogen in, A., 229.
 solubility of oxygen in, A., 229.
 osmotic properties of, A., 229.
 isoelectric point of membranes of, and their hæmolysis, A., 1519.
 escape of hæmoglobin from, in hæmolytic, A., 1517.
 catalase action of, A., 658.
 co-enzyme from, A., 1162.
 effect of p_H on oxygen-combining capacity of, A., 371.
 phosphatase of, A., 1164.
 variation in protein content of, after food intake, A., 999.
 action of insulin on, A., 538.
 effect of progynon on, A., 1034.
 photobiological action of sodium sulphite on, A., 1275.
 effect of spleen extracts on, A., 643.
 bird's, resynthesis of adenylypyrophosphoric acid by, A., 640.
 ammonia formation and respiration in, A., 229.
 of various breeds of cattle, A., 1391.
 of different groups, agglutinogens of, A., 1263.
 human, uric acid content of, A., 1260.
 determination in, of sodium, A., 372.
 mammalian, solvent-water in, A., 999.
 electric impedance of hæmolyzed suspensions of, A., 1260.
 reticulocyte, fragility and maturation of, A., 507.
 white, electric impedance of suspensions of, A., 640.
 phagocytosis of silica by, A., 640.
 rabbit's, effect of cortico-adrenal extracts on, A., 1391.
 of women, during pregnancy, lactation, and puerperium, A., 517.
- Blood-groups, specific carbohydrates of, A., 1000.**
Blood-meal, digestibility of, B., 172.
Blood-pigment. See Hæmoglobin.

- Blood-pigments**, A., 878.
physiological degradation of, A., 103.
- Blood-plasma**, coagulation of, in absence of lipins, A., 375.
by organ extracts, A., 1002.
rate of, A., 1002.
effect of severe work on colloids of, A., 879.
effect of diet on proteins of, A., 1261.
of cows, calcium and phosphorus in, A., 1143.
hen's, laying, phosphorus in, A., 374.
of insects, protein content of, A., 643.
- Blood-platelets**, detection in, of thymonucleic acid, A., 230.
- Blood-serum**, physical chemistry of, A., 1262.
colloidal osmotic pressure of, A., 879.
effect of heat on, A., 1002.
adsorption experiments on forms of calcium and phosphorus in, A., 880.
graph of ionic equilibria in, A., 1143.
effect of injections of serin on protein disequilibrium in, A., 1517, 1519.
effect of mineral composition of diet on constituents of, A., 524.
effect of thyroidectomy on constituents of, A., 1517.
extraction of cholesterol from, A., 1261.
combination of cholesterol in, A., 770.
effect of nutrition on enzymic activity of, A., 1035.
gonadotropic hormone in, A., 667.
effect of electrolytes on myxoprotein of, A., 1261.
stability of lipin-protein complexes in, A., 1261.
protein fractions of, A., 1394.
effect of diet on proteins of, A., 1261.
relation between body-fluids and, A., 385.
of animals, silica content in, A., 1262.
cow's, carotene and vitamin-A in, A., 1545.
dog's, osmotic pressure and protein in, A., 508.
of different groups, hæmolytic power of, A., 1262.
hen's, laying, phosphorus in, A., 374.
human, differentiation of pigments of, A., 103.
determination in, of sulphates, A., 881.
of immunised animals, lactogelification of, A., 1143.
spectrophotometric analysis of pigments of, A., 103.
detection of industrial poisoning by examination of, A., 120.
determination in, of amino-acids, A., 1517.
of carotene and vitamin-A, A., 1427.
of phosphorus, A., 509.
of potassium, volumetrically, A., 1519.
of proteins, A., 386.
of urea, A., 880.
of vitamin-C, A., 547.
- Blood-vessels**, reaction of, A., 1018.
- Blow-flies**. See under Flies.
- Blue couch grass**, hydrocyanic acid in, A., 1042.
- Blue grass**, Kentucky, utilisation of nutrients by, A., 420.
- Bodo caudatus**, effect of γ -rays on growth and nitrogen metabolism of, A., 782.
nitrogen metabolism and respiration of, A., 535.
- Body**, daily variation in temperature and excretion of, A., 113.
determination of state of hydration of, A., 892.
water and base balance in, A., 1403.
- Body**, distribution of water in, with increase and decrease of extracellular electrolytes, A., 1404.
human, elimination of water from, A., 246.
- Body-fluids**, relation between blood-serum and, A., 385.
state of calcium in, A., 374.
cholesterol and its protein complexes in, A., 517.
determination of changes in, A., 392.
- Body-weight** in relation to basal metabolism and excretion, A., 651.
- Bœvis volubilis*, cardiac-active glucosides from, A., 1019.
- Bog-moss**, A., 266, 421.
- Boilers**, use of blended fuels in, B., 833.
natural gas as fuel for, B., 132.
cast iron for, B., 1046.
paints for interior of, B., 1151.
prevention of crusting of safety plugs of, B., 1049.
feeding of water to, (P.), B., 50.
use of mountain water in, B., 209.
zinc plates for, in German ships, B., 289.
removal of scale from, (P.), B., 755.
deposition of silicate scales in, B., 209.
siliceous scale in, and its prevention, B., 577.
prevention of scale in, (P.), B., 386, 1074.
prevention and removal of scale in, (P.), B., 482, 610.
protection of, against scaling with sodium phosphate, B., 257.
effect of colloidal graphite on corrosion of plates of, B., 104.
high-pressure, for pulp and paper industry, B., 719.
high-temperature, alloy steel for plates of, (P.), B., 108.
mercury, (P.), B., 908.
pulverised-fuel, electro-filters in working of, B., 705.
steam, use of diphenyl-diphenyl oxide mixtures in, B., 577.
sampling and analysis of solid fuels for, B., 978.
waste-heat, heat transmission in, B., 785.
for open-hearth furnaces, B., 977.
- Boiling pans**, steam-jacketed, (P.), B., 130.
- Boiling point**, determination of, apparatus for, A., 57.
relation of, to molecular refraction and volume, A., 916.
of compounds of high mol. wt., determination of, B., 837.
- Bokspitite** from South Africa, A., 956.
- Boleite**, crystal structure of, A., 571.
- ψ -Boleite*, crystal structure of, A., 571.
- Boletols**, and their derivatives, A., 347.
- Boletus**, colouring matter of, A., 347.
- Boletus luteus*, phenylthylamino in, A., 1433.
- Bolometers**, sensitivity of radiometers, thermopiles, and, A., 57.
- Bombs**, Parr, nickel-plated, for peroxide fusions, A., 1340.
- Bombicesterol**, A., 105.
- Bombyx mori*. See Silkworms.
- Bone**, growth and calcification of, A., 393.
effect of rickets on structure of, A., 238.
effect of solar radiation on, A., 1280.
composition of, A., 377.
constituents of, A., 1144.
calcium content of, *in vivo*, A., 1396.
chondroitinsulphuric acid in, A., 111.
mineral constituents of, A., 1396.
phosphatase of, hydrolysis of hexose diphosphates by, A., 660.
effect of gangliary sympathectomy on, A., 1279.
- Bone**, phosphatase of, in fractures, A., 1026.
in heterotopic formation, A., 1417.
salts of, in healthy and rachitic animals, A., 234.
chemistry of, A., 1004, 1396.
influence of excess of calcium and phosphorus on healing of fractures of, A., 651.
fractured, phosphatase activity in healing of, A., 1417.
leg, of chicks with slipped tendon, ash content of, A., 1520.
of new-born infants, chemistry and histology of, A., 882.
pig's, testing of, A., 393.
rabbit's, calcification in, A., 393.
rat's, phosphatase of, A., 1164.
phosphorus-nitrogen ratio in, A., 525.
young, salts of, A., 377.
determination in, of lead, A., 247.
- Bone-ash**, effect of calcium in diet on, A., 670.
- Bone black**, regeneration of, B., 211.
- Bone-marrow**, copper in, A., 643.
rabbit's, oxygen consumption of, A., 520.
- Bone-marrow extracts**, influence of, on synthesis of hæmoglobin, A., 230.
- Bone meal**, supplemental feeding of cattle with, B., 699.
water in, B., 476.
"dicapho," and limestone as mineral supplements for pigs, A., 654.
analysis of, B., 1115.
- Bongkreic acid**, and its effect on carbohydrate metabolism, A., 1540.
- Boots**, coated fabrics for, (P.), B., 946.
leather substitute for uppers of, B., 863.
use of rubber latex in, B., 961.
attachment of rubber soles to, B., 862.
- Boracite**, crystal structure of, A., 571.
- Borasilide**, A., 969.
- Borax**. See Sodium borate.
- Bordeaux mixture**, availability of copper in residues of, B., 568.
insoluble copper compounds as substitutes for, B., 567.
- Borneol**, structure of, A., 625, 983.
production of, B., 1036.
phase diagrams of binary systems containing A., 703.
- isoBorneol*, structure of, A., 625, 983.
racemisation during transformation of, to campheno, A., 89.
- epi-isoBorneol*, and its derivatives, A., 496.
- Borneols**, preparation of, A., 89.
- cis-* and *trans- π -apoBorneol-7-carboxylic acids*, and their derivatives, A., 625.
- trans- π -apoBorneol-7-carboxylic acids*, A., 350.
- Bornite-chalcophyrite**, A., 842.
- Bornoxyacetic acids**, derivatives of, and their use in purification of borneols, A., 89.
- Bornyl chloride**, production of, B., 1036.
- isoBornyl esters*, formation of, from campheno, A., 1375.
- epiBornyl ether*, A., 496.
- epi-isoBornyl acetate*, A., 496.
- Bornylbenzene**, and its derivatives, A., 754.
- p-Bornylbenzoic acid*, A., 754.
- Bornyltoluenes**, preparation of, by application of Friedel-Crafts reaction, A., 349.
- Boro fish**. See *Pisodonophis boro*.
- Boron**, nuclear transformations of, A., 910.
isotopes, masses of, A., 5.
disintegration of, A., 802.
by deutons and by protons, A., 1442.
by neutrons, A., 678, 1297.
by α -particles, A., 277.

- Boron**, range of disintegration particles from, produced by proton bombardment, A., 426.
induced radioactivity of, A., 803.
identification of radio-elements produced from, by deuteron bombardment, A., 559.
effect of temperature and infra-red light on electrical resistance of, A., 148.
and its oxide and nitride, action of sodium formate on, A., 459.
- Boron compounds**, influence of, on plant growth, B., 690, 967.
accumulation of, by reciprocally grafted plants, A., 1548.
effect of, in fertilisers, B., 244.
poisoning by. See under Poisoning.
- Boron arsenate**, A., 180, 833.
carbide, abrasive properties of, B., 804.
use of, as an abrasive and wear-resisting material, B., 227.
moulded, impact abrasion hardness of, B., 1094.
trichloride, absorption spectrum and molecular structure of, A., 281.
trifluoride, band spectrum of, A., 562.
organic reactions with, A., 195, 744, 1357.
halides, band spectra of, A., 144.
action of substituents on, A., 459.
hydride, preparation of, A., 50.
hydrides, A., 738.
preparation of, A., 459.
nitride, determination of, volumetrically, A., 1093.
monoxide, band spectrum of, A., 561, 1299.
trioxide, preparation and physical properties of, A., 434.
Raman effect in, A., 564.
radioactivity of, A., 1442.
viscosity data for, A., 1313.
viscosity of fused mixtures of sodium borate and, A., 24.
equilibrium of, with sodium oxide, A., 434, 574.
with water, A., 1333.
phosphorescent, preparation of, A., 313.
- Boric acid**, A., 1333.
and its alkali salts, A., 313.
manufacture of, from kernite, (P.), B., 186.
from sodium tetraborate, (P.), B., 305.
and sodium phosphate, (P.), B., 305.
separation of borax and, by flotation from salt mixtures, B., 722.
thermal dissociation and vapour pressure of, A., 24, 817.
vapour pressure and thermal dissociation of, A., 1461.
absorption of ammonia in, A., 718.
density of aqueous solutions of, A., 575.
 η_{sp} of solutions of borax and, A., 305.
reactions of, A., 1095.
condensation reactions of, A., 166.
reaction of, with apomorphine, A., 637.
effect of, on plants, A., 552.
phosphorescent, preparation of, A., 565.
assay of ointments of, B., 123.
determination of, in fertilisers and soils, B., 820.
- Borates**, structure and properties of, A., 574.
absorption spectra and structure of, A., 1189.
- Perborates**, determination of, in soap powder, B., 275, 639.
- Hydroxyfluoboric acid**, A., 592.
- Boron organic compounds** :—
Boron alkoxy-trichlorides, A., 459.
Boric acid, reaction products of glycols and, (P.), B., 138.
Boric acids, substituted, electric moments of, A., 1192.
- Boron detection and determination** :—
detection of, by flame reaction, A., 949.
determination of, by flame reaction, A., 949.
spectrographically, A., 719.
volumetrically, A., 1093.
- Borophosphates**, A., 832.
- Borotartaric acid**, potassium salt, poisoning by. See under Poisoning.
- Borotartaric acids**, configuration of, A., 34.
- 12-Borotungstic acid**, calcium salt, crystal structure of, A., 920.
- Bothus macoticus*, composition of, A., 1005.
- Botryllus schlosseri*, carotenoids of, A., 233.
- Bottles**, manufacture of sealing capsules for, from cellulose acetate, viscose, and gelatin, B., 446.
glass. See Glass bottles.
stoppered, opening of, A., 723.
- Bougault reaction**, A., 1495.
- Boulder Dam**, B., 591.
- Bourbonal**, condensation product of, with barbituric acid, A., 759.
- Bowlingite**, A., 843.
- Brain**, respiration of, A., 262, 1529.
glycolysis in tissues of, A., 402.
effect of potassium on, A., 251.
effect of extirpation of motility region of, on muscle, A., 645.
acetylcholine in, A., 115.
liberation of ammonia by, after natural stimulation, A., 1407.
distribution of barbiturates in, A., 525.
distribution in, of diethylbarbituric acid, A., 1396.
oxidation of lactic acid in, A., 653.
lecithin in, and in diet, A., 1520.
detection and distribution of narcotics in, A., 394.
phosphorus compounds of, A., 1265.
effect of tissue poisons on pyruvic acid in, A., 262.
vitamin-C content and distribution in, A., 1286.
in hypnosis and narcosis, dehydrogenase and hydrogen donors in, A., 532.
in narcosis, hypnosis, and poisoning by iodoacetic acid, dehydrogenase and hydrogen donors in, A., 658.
of animals, creatinephosphoric acid in, A., 1520.
avitaminotic, pyruvic acid in, A., 130.
cat's, normal and fasting, composition of, A., 1520.
guinea-pigs, chlorine and phosphorus in, A., 238.
of theophyllinised guinea-pigs, action of morphine on permeability of, to sodium ferrocyanide, A., 528.
human, kephalin from, A., 376.
oxygen content of venous blood of, A., 370.
mammalian, kephalin fraction of, as inducing agent, A., 519.
lactic acid content of, A., 1264.
mid-, effect of, on iodine metabolism, A., 259.
pigeon's, in avitaminosis action of crystalline vitamin-B, on, A., 668.
rat's, effect of morphine on oxygen consumption by, A., 528.
albino rat's, effect of growth hormone on, A., 666.
- Brain**, of vertebrates, creatine content of, A., 1520.
determination in, of ascorbic acid, A., 1036.
of chlorine, A., 772.
of morphine, A., 1156.
- Brain extracts**, formation of lactic acid and lactacidogen in, A., 1531.
- Brakes**, dressing for, (P.), B., 788.
drums for, (P.), B., 435.
manufacture of linings for, (P.), B., 211, 338, 435*, 533, 931.
moulded lining material for, (P.), B., 388.
hydraulic, fluids for, (P.), B., 338, 1078.
- Brake shoes**, manufacture of, (P.), B., 105.
- Bran**, influence of feeding pentosan and fibre of, A., 653.
- Brandy**, purification of, B., 745.
chemical evaluation of, B., 871.
analysis of, with Zeiss step-photometer, B., 379.
- Brass**, treatment of, before cold-working, (P.), B., 235.
heat treatment of, (P.), B., 680.
metal losses in melting of, B., 952.
fluxes for melting and refining of, (P.), B., 66.
age-hardening of, B., 500.
die-casting with, B., 411.
soldering of, to aluminium, A., 1098.
influence of nickel on, B., 770.
oxide films on, A., 1469.
for bearings, (P.), B., 680.
aluminium, oxide films on, A., 1469.
high-copper, atmospheres for annealing of, B., 856.
hot, stampings from, B., 361.
red, deoxidation and degasification of, B., 1048.
scrap, use of, in foundries, B., 500.
strip and wire, annealing of, (P.), B., 155.
yellow, deoxidation and degasification of, B., 1048.
63-37, effect of β -crystals on properties of, B., 27.
semi-micro-analysis of, A., 1095.
- α -Brass**, rolling texture of, B., 361.
cold-rolled, hardness and lattice distortion of, B., 272.
rolled, texture of, A., 693.
- Brassido-bromobehenic acid**, configuration of, A., 195.
- Brassylic acid**, ethylene ester, A., 845.
- Bread**, making of, (P.), B., 972.
physical chemistry of, A., 33, 165.
fermentable sugars, alcoholic fermentation, and gas production in, B., 921.
baking of, (P.), B., 748.
tunnel oven for, (P.), B., 332.
use of cooking salt in, B., 42.
and wheat proteins, B., 475.
effect of, on vitamin-B, B., 1019.
measurement of colour of, with Maxwell discs, B., 425.
effect of acetyl-methylcarbinol on flavour of, B., 652.
determination of freshness of, B., 377.
temperature inside rolls of, B., 604.
improver for, (P.), B., 122.
leavening agent for, (P.), B., 122.
soluble matter in flour, dough, and, B., 824.
effect of flour on grain and texture of, B., 426.
availability of carbohydrates in, A., 1408.
furfuraldehyde in, B., 91.
significance of water in, B., 520.
testing of paper for wrapping of, B., 491.
effect of acidity on growth of *Aspergillus niger* in, B., 652.

- Bread**, digestion of, A., 1529.
 nutritional value of, A., 1271.
 effects of steaming and baking on, B., 1019.
 production of haemoglobin on diet of, A., 1271.
 from meslin, B., 780.
 wheat, white, and rye, biological value of proteins of, A., 1406.
 determination in, of sugars, B., 1113.
- Breweries**, water purification in, B., 76.
 disinfectants for, B., 203.
- Brewing**, application of oxidation-reduction potential in control of, B., 1015.
 glass-lined steel equipment for, B., 1048.
 barley quality for, B., 871.
 enzymes in, B., 76.
 composition of liquor for, B., 1112.
 classification of protein-nitrogen in, B., 1112.
 poisoning of yeast by copper in, B., 569.
 water for, B., 656.
 influence of mineral constituents of, B., 779.
 in America, B., 1015.
- Bricks**, manufacture of, (P.), B., 229.
 from diatomaceous earths, (P.), B., 497.
 treatment of, before burning, (P.), B., 228.
 kilns for burning of, (P.), B., 102, 228, 454.
 moulding of, (P.), B., 853.
 decoration of, (P.), B., 101.
 sand-facing of, (P.), B., 546.
 changes in size of, on treatment with water, B., 188.
 coating of surfaces of, (P.), B., 456.
 laboratory tests and weathering properties of, B., 188.
 improving thermal stability of, for lining coke-oven doors, B., 1094.
 classification of, by water absorption, B., 994.
 acid-proof, cement for, (P.), B., 950.
 "antique," manufacture of, (P.), B., 806.
 building, B., 227.
 clay, absorption of water by, B., 24.
 Dinas, effect of grinding of quartz sand on quality of, B., 227.
 modifications of quartz in, B., 804.
 use of, B., 630.
 fireclay, refractoriness and size of grain of grog in, B., 307.
 insulating, physical properties of, B., 356.
 magnesite, production of, from carbonate raw materials, B., 546.
 burning of, B., 545.
 "Radex," constituents and properties of, B., 546.
 refractory, (P.), B., 1046.
 manufacture of, from chrome ore, (P.), B., 631.
 thermal conductivity of, B., 406.
 for open-hearth furnaces, B., 454.
 for ovens for carbonisation of pitch, B., 993.
 for steel-annealing furnaces, B., 727.
 chromite, production of, (P.), B., 1095.
 "semi-acid," production of, B., 307.
 for linings for steel casting, B., 851.
 silica, influence of additions on, B., 545.
 for coke ovens, B., 949.
 from insulated and uninsulated basic open-hearth furnace roofs, B., 454.
- Bridges**, manganese steel for, B., 499.
- Bright's disease**. See Nephritis.
- Brilliant Avirol**, determination of, B., 449.
- Brilliant-green**, toxicity of, for bacteria, A., 665.
- Brilliant-green lactose bile**, solid, A., 409.
- Brilliant-yellow** as indicator for p_H , A., 947.
- Brine**, removal of soluble silica from, (P.), B., 899.
 portable cells for electrolysis of, (P.), B., 508.
 production of bromine from, (P.), B., 187.
 recovery of iodine from, (P.), B., 187.
 recovery of iodine and bromine from, (P.), B., 100.
 production of magnesium oxide from, B., 1141.
 for refrigerators, (P.), B., 543.
 calcium chloride, heat transfer of, in pipes, B., 433.
 determination in, of bromine, B., 671.
 of sulphates, B., 671.
- Briquettes**, B., 389.
 manufacture of, from coal dust, lignite dust, etc., (P.), B., 662.
 manufacture of binders for, (P.), B., 87.
 absorbent, (P.), B., 536.
 coal, manufacture of, (P.), B., 757.
 carbonisation of, (P.), B., 134.
 strength of, B., 659.
 fuel, (P.), B., 661.
 manufacture of, (P.), B., 87, 259, 536, 935.
 from waste material, (P.), B., 536.
 carbonisation of, (P.), B., 393.
 retorts for continuous distillation of, (P.), B., 935.
 carbonised, production of, (P.), B., 8.
 smokeless, production of, (P.), B., 1033.
- Bristles**, moisture-resistant, for brushes, etc., (P.), B., 96.
- Bromal derivatives**, production of, (P.), B., 782.
- Bromates**. See under Bromine.
- Bromic acid and Bromides**. See under Bromine.
- Bromine atoms**, A., 432.
 kinetics of recombination of, A., 586.
 isotopes of, produced by neutron bombardment, A., 678.
 occurrence of, in decomposition products of Solikamsk carnallite, B., 60.
 production of, from brine, (P.), B., 187.
 from Solikamsk sylvinites, A., 583.
 extraction of, from solutions by petroleum, B., 269.
 recovery of, from brine, (P.), B., 100.
 omission spectrum of flame of, in hydrogen, and mechanism of the reaction, A., 1291.
 $K\alpha$ -emission spectrum of, A., 1439.
 spark spectrum of, A., 423.
 radioactivity of, induced by neutrons from heavy water, A., 276.
 Zeeman effect in, A., 271.
 rate of evaporation of, from aqueous solutions, A., 439.
 vapour, magnetic susceptibility of, A., 1312.
 cryoscopy of mixtures of, with nitrogen peroxide, A., 934.
 adsorption and recovery of, from active charcoal, A., 930.
 adsorption of, by silica gel, A., 696.
 action of, on cellulose, A., 478.
 with deuterium, A., 39.
 with ethylene derivatives in methyl alcohol, A., 603.
 on platinum, A., 941.
 on silver salts, A., 857.
 in the organism, A., 1518.
 in tissues, A., 234.
 radioactive, disintegration of, A., 1296.
 investigation of reactions with, A., 1441.
- Bromine monochloride**, equilibrium of formation of, A., 1206.
 trifluoride, absorption spectrum of, A., 9.
 monoxide, equilibrium of formation of, A., 702.
 monoxide, A., 1334.
- Hydrobromic acid**, preparation of, A., 715.
 effect of inert gases in photosynthesis of, A., 46.
 physical properties of deuterium bromide and, A., 1313.
 reaction of, with alcohols, A., 453.
 on nitrogen afterglow, A., 1437.
 determination of, in presence of hydrochloric acid, A., 1214.
- Bromides**, thermochemistry and physical properties of, A., 918.
 detection of, in presence of chlorides, iodides, and thiocyanates, A., 462.
 detection and determination of, colorimetrically, A., 835.
 determination of, in presence of chlorides, A., 183, 835.
 in presence of magnesium, potassium, and sodium chlorides, A., 316.
 by photometric titration, A., 1091.
- Bromic acid**, reduction velocity of, A., 452.
 oxidation of nitrous acid by, A., 173.
- Bromates**, electroreduction and determination of, A., 1079.
 kinetic salt effect in reaction of, with bromides and acids, A., 308.
 action of, with chromic oxide, A., 834.
 indicator for titration with, A., 1215.
- Hypobromites**, kinetics of decomposition of, A., 1327.
 nuclear halogenation with, A., 746.
 colour reaction of, with ammonia and thymol, A., 1337.
- Bromine detection and determination**:—
 detection of, with resorufin, A., 183.
 in organic compounds, A., 876.
 determination of, in biological material, A., 1182.
 in blood, A., 375.
 microchemically, A., 643.
 in blood and sera, A., 881.
 in blood and tissues, A., 104.
 in brine, B., 671.
 in presence of chlorine, A., 1091, 1214.
 in organic compounds, microchemically, A., 1258.
 in organic substances, argentometrically, A., 101.
- α -Bromo-acids**, degradation of, A., 751.
- $\alpha\beta$ -diBromo-acids**, dehalogenation of, A., 1105, 1131.
- α -Bromo-ketones**, reaction of, with magnesium organic compounds, A., 493.
- Bromoform**, recovery of, in heavy-mineral separation, B., 501.
 addition of, to *o*-chlorobenzaldehyde, A., 486.
- Bromometry**, indicators for, A., 718.
- Bromo-olefines**, preparation of, A., 1105.
 reactions of, A., 958.
- diBromo-olefines**, reactions of, A., 958.
- Bromophenols**, condensation of, with benzoyl and nitrobenzoyl chlorides, A., 339.
- Bromsalizol**, pharmacology and therapeutics of, A., 895.
- Bromural**, m.p. of binary systems of, with phenacetin and salol, A., 582.
- Bronze**, primitive smelting of, B., 231.
 deoxidation and degasification of, B., 1048.
 porosity and segregation of ingots of, B., 952.
 bonding strength of babbitt metal to steel and, B., 152.

- Bronze**, mould for joining steel and, (P.), B., 314.
corrosion-resistance of, B., 500.
stampings from, B., 361.
influence of nickel on, B., 770.
aluminium. See Aluminium bronze.
copper. See Copper bronze.
lead. See Lead bronze.
manganese. See Manganese bronze.
plastic, manufacture of bearings of, (P.), B., 1147.
scrap, use of, in foundries, B., 500.
special, properties of, B., 952.
tin. See Tin bronze.
- Bronze powder**, production of, (P.), B., 956.
- Brownian motion**, theory of, A., 162.
observation of, A., 1318.
effect of light on, A., 1459.
effect of magnetic fields on, A., 31, 295.
distribution functions in, A., 31.
visible with naked eye, A., 162, 699.
of an ellipsoid, A., 15.
- Brucella**, oxidation-reduction in growth of, A., 407.
activation of specific agglutination of antibodies of, A., 664.
- Brucella abortus**, fractions of, A., 664.
- neobrucidine derivatives**, A., 505.
dimethiodide, A., 1389.
- Brucine**, A., 1137, 1389.
salts, quaternary, catalytic decomposition of, A., 367.
- Brucine**, 11-amino-, nitrate and derivatives of, A., 874.
11-nitroso-, oxidation of, A., 996.
- Brucine series**, degradations in, A., 874.
- isobrucinolone hydrate perchlorate**, A., 1389.
- Brucinolone-b hydrate hydrochloride**, and its derivatives, A., 1389.
- Brucinolones**, hydrogenation of, A., 1389.
- Brushes**, moisture-resistant bristles for, (P.), B., 96.
- Bryophyllum crenatum**, growth-inhibitor in leaves of, A., 548.
- Bucium**, chemistry in the, A., 1343.
- Buckwheat**, analysis of, A., 266.
- Buellia canescens**, constituents of, A., 133.
- Bufagin**, crystal structure of, A., 921.
- Buffers**, action of sea water as, A., 38.
- Buffer action and reciprocity of acid-base function**, A., 1091.
- Buffer solutions**, A., 1076.
- Bufo arenarum and regularis**, poisons from, A., 1502.
- Bufotalin derivatives**, A., 749.
- ψ -Bufotalin**, and its bromide, pharmacology of, A., 1274.
- Bufotalone derivatives**, A., 749.
- Bufotenin**, synthesis of, A., 1378.
ethyl ether. See 5-Ethoxy-*NN*-dimethyl-tryptamine.
- picroates**, A., 1379.
- Bufotinine**, synthesis of, A., 1256.
- Bugs**, chinch. See Chinch bugs.
mealy, control of, with petroleum distillate, B., 327.
- Building**, application of chemistry in, B., 950.
welding in, B., 1098.
use of abrasive products in, B., 1094.
use of aluminium in, B., 1098.
use of lead in, B., 1098.
use of synthetic plastics in, B., 1103.
- Buildings**, prevention of corrosion of steel in, B., 807.
weathering of, in Munich, B., 357.
- Building blocks**, (P.), B., 951.
manufacture of, (P.), B., 102, 229.
moulding of, (P.), B., 853.
- Building blocks**, coloured, manufacture of, (P.), B., 994.
heat-insulating, (P.), B., 188.
light, manufacture of, (P.), B., 806.
refractory, (P.), B., 1046.
- Building boards**, fibre, B., 950.
testing of, B., 1039.
- Building materials**, (P.), B., 271.
manufacture of, (P.), B., 24, 229, 769.
United States code for, B., 1096.
use of coal tar products as, B., 1028.
production of hydraulic binding for, (P.), B., 951.
plastic material for moulding of, (P.), B., 769.
use of shale ash in, B., 1028.
use of sodium silicate as, B., 950.
permeability of, to air, B., 852.
coating of, (P.), B., 320.
production of glazed coatings on, (P.), B., 25.
waterproofing of, (P.), B., 308.
bituminous, (P.), B., 994.
cellular, production of, (P.), B., 407.
from chlorinated rubber, (P.), B., 770.
fireproof, relation between permeability to water and structure of, B., 24.
porous, B., 188.
manufacture of, (P.), B., 229.
refractory, action of glass on, B., 545.
surfacing, (P.), B., 951.
wooden, fireproofing of, B., 308; (P.), B., 309.
- Bulbs**, control of flies in, B., 248.
- Bulbocapnine**, determination of, in tissues, A., 1018.
- Bunt**, copper compounds for control of, B., 1158.
- Bupleurum falcatum**. See Ch'ai Hu.
- Bupleurum**, mol, and its acetate, A., 905.
- Burettes**, (P.), B., 611.
reading device for, A., 466.
for standard reducing solutions, A., 840.
Bunsen, modified, A., 1098.
micro-, A., 189, 466.
with changeable tip, A., 952, 1218.
without stopcocks, A., 1476.
mercury piston, A., 1476.
reservoir, A., 270.
- Burkeite**, from Scarles Lake, California, A., 323.
- Burns**, biochemistry of, A., 1400.
treatment of, with cod-liver oil salve, A., 1150.
- Burners**, for pulverulent fuel, (P.), B., 892.
for oil gas, (P.), B., 757.
for refuse, low-grade fuels, etc., (P.), B., 55.
Bunsen, A., 59.
micro-, A., 1096.
- Butadiene**, formation of, by thermal decomposition of cyclohexane hydrocarbons, A., 73.
by action of high-frequency discharge on ethylene, A., 192.
preparation of, from ψ -butylene, A., 324.
from *s*-dimethylethylene, A., 1480.
condensation of, with alkylbenzoquinones, A., 863.
reaction of, with arylamines, A., 205.
action of bromine on, A., 827.
compound of, with 1-acetoxy-4:9-anthraquinone, A., 217.
derivatives, manufacture of reaction products of hydrogen halides and, (P.), B., 962.
manufacture of polymerisation products of, (P.), B., 33.
- Butadiene**, β -chloro-, polymerisation of, (P.), B., 618.
- Butadiene**, $\beta\gamma$ -di- and $\alpha\beta\gamma$ -tri-chloro-, production of, (P.), B., 395.
 β -hydroxy-, manufacture of esters of, (P.), B., 347.
- $\Delta^{\alpha\beta}$ -Butadiene**, isomerisation of, by floridin, A., 957.
- $\Delta^{\alpha\gamma}$ -Butadiene**, dimerisation of, A., 1480.
- $\Delta^{\alpha\gamma}$ -Butadiene**, $\alpha\beta$ -dichloro-, A., 1221.
 δ -cyano-. See $\Delta^{\alpha\gamma}$ -Pentadienonitrile.
- Butadienes**, reaction of, with sulphur dichloride, A., 325.
- Butadienesulphone**, and its dibromide, A., 604.
- Butadienesulphones**, isomerides of, A., 1105.
- Butadienetoluquinone**, and its monoxime, A., 863.
- Butadiene-p-xylorquinone**, and its semicarbazone, A., 1372.
- Butadien- β -yl esters**, A., 473.
- Butadi-inene**, ultra-violet absorption spectrum of, A., 1299.
- Butaldehyde**, condensation of, with ammonia, A., 627, 868.
- isobutaldehyde cyanohydrin**, condensation of, with resorcinol, A., 1371.
- n*- and isobutaldehydes**, *p*-nitrobenzoylhydrazones of, A., 1259.
o-tolylsemicarbazones, A., 1259.
- Butane**, molecular vibration of, A., 917.
production of, from petroleum in Germany, B., 132.
thermodynamics of, B., 433.
ozonisation of, A., 1103.
use of, as a fuel, B., 212.
as substitute for oil gas at Needles, B., 438.
- Butane**, $\beta\beta\gamma\delta$ -tetra- and $\alpha\beta\beta\gamma\delta$ -penta-chloro-, production of, (P.), B., 395.
 $\beta\gamma$ -dihydroxy-, and its derivatives, A., 606.
 β -iodo- γ -hydroxy-, acetate and ethers, A., 605.
esters, A., 729.
- isobutane**, chlorinated, treatment of, (P.), B., 1085.
- Butanes**, diamino-, preparation of, A., 1227.
complex gold salts, A., 1227.
- Butane- α -arsinic acids**, γ -chloro-, A., 333.
- Butane- α -dichloroarsine**, β -chloro-, A., 333.
- $\alpha\delta$ -Butanediarsinic acid**, A., 333.
- Butanedicarbamide**, A., 1155.
- Butane- $\alpha\beta$ -diols**, A., 193.
- n*-Butane- $\alpha\alpha$ -disulphonic acid**, barium salt, phenyl ester and di(ethylamide) of, A., 472.
- n*-Butane- $\alpha\alpha\beta\delta\delta$ -pentacarboxylic acid**, pentaethyl and pentamethyl esters, A., 475.
- isobutane- $\alpha\alpha\beta\gamma\gamma$ -pentacarboxylic acid**, pentaethyl ester, A., 476.
- n*-Butaneseleninic acid**, and its lead salt, A., 959.
molecular compounds of, A., 960.
- (+)- β -Butanesulphonic acid**, A., 1230.
- Butan- β -one**, α -hydroxy-, 2:4-dinitrophenylhydrazone, A., 193.
- Butea frondosa**, flowers of, A., 1181.
acid fraction from seeds of, A., 1550.
- Butene**. See Butylene.
- Δ^{α} -Butenoic acids**, γ -bromo-, and γ -hydroxy-, derivatives of, A., 64.
- Δ^{β} -Butenoic acid**. See Vinylacetic acid.
- 4-Butenylamino-3-butenyltoluene**, and its nitrosoamine, A., 206.
- isobutenylsols**, A., 483, 484.
- 2- Δ^{γ} -Butenylfurans**, 2- $\alpha\beta$ -dihydroxy-, and their phenylurethanes, A., 963.
- d*- Δ^{β} -Butenylglycine**, A., 1228.
- dl*- Δ^{β} -Butenylglycine**, and its hydrochloride, A., 1228.
- Δ^{β} -Butenylhippuric acids**, A., 1228.
- Δ^{γ} -*n*-Butenylmalonic acid**, A., 195.

- 2-*iso*Butenylphenol, and its *p*-nitrobenzoate, A., 483.
o-Butoxyaniline, A., 1364.
 Butoxybenzene, *o*-iodo-, and *o*-nitro-, A., 1364.
 4-*n*-Butoxy-3-carbo- β -bromoethoxydiphenyl, production of, (P.), B., 878.
 4-*n*-Butoxy-3-carbo-*n*-butoxydiphenyl, manufacture of, (P.), B., 878.
 4-*n*-Butoxy-3-carbo- β -diethylaminoethoxydiphenyl, production of, (P.), B., 878.
 4-*n*-Butoxy-3-carboxydiphenyl, production of, (P.), B., 878.
 2-*n*-Butoxydiphenyl-3-carboxylic acid, and its 4'-amino-derivative, production of, (P.), B., 701.
 4-*n*-Butoxydiphenyl-3-carboxylic acid, and its 4'-nitro-derivative, production of, (P.), B., 701.
 2'-Butoxydiphenyl-6-carboxylic acid, 2-nitro-, A., 1364.
 β -*n*-Butoxyethyl *p*-aminobenzoate, and its picramide, A., 1494.
p-nitrobenzoate, A., 1494.
 other, manufacture of, (P.), B., 715.
m-Butoxyphenyl β -diethylaminoethyl ether, (P.), B., 1132.
 γ -Butoxypropyl alcohol, A., 483.
 2-Butoxypyridine, 5-amino-, 5-acetyl derivative, manufacture of, (P.), B., 430.
 6-Butoxypyridine, 3-amino-, A., 498.
 Butrin, A., 1181.
 Butter, production of, (P.), B., 1116.
 neutralisation of cream for, B., 874, 1161.
 uniformity in, B., 874.
 p_H of wash-water for, B., 874.
 control of composition of, B., 698.
 aroma of, B., 462.
 flavour and keeping quality of, B., 1161.
 fishy flavour in, B., 1019.
 firmness of, B., 921.
 hardness of, and iodine value of fat, B., 122.
 spreadability of, B., 475.
 new constant for, B., 1115.
 and its manufacture, chemistry of, B., 825.
 use of citric acid and sodium citrate in, B., 571.
 diacetyl in, B., 378.
 flavour improvers containing diacetyl for, B., 781.
 effect of southern U.S.A. roughages on properties of, B., 426.
 effect of feeding cacao-shell to cows on vitamin-D content of, A., 1287.
 effect of feeding-stuffs on quality of, B., 248.
 influence of soya-bean cake on quality of, A., 884.
 nutritive value of margarine and, A., 653.
 bacteriological defects in, B., 1161.
 microbiology of, B., 604.
 examination of, for paratyphoid and typhoid bacteria, A., 663.
 vitality of typhoid bacilli in, A., 1168.
 biological efficiencies of carotene and vitamin-A of, A., 260.
 hypolipæmia after ingestion of, A., 523.
 cacao. See Cacao butter.
 from goats' milk, B., 475.
 substitutes, production of, (P.), B., 827.
 synthetic, manufacture of, B., 859.
 winter, improving consistency of, B., 204.
 detection in, of coconut oil, B., 43.
 determination in, of salt, B., 1066.
 Butter-fat, microcrystalline structure of, B., 462.
 Butter-fat, effect of fat feeding on, A., 241.
 effect of feeding on moulds on anti-rachitic potency of, A., 1431.
 seasonal variation in, A., 241.
 effect of baking and admixture of egg substances on, B., 874.
 arachidonic acid in, A., 106.
 octadecadienoic acid in, A., 1005.
 vitamin-A in, produced on maize and wheat rations, B., 332.
 Indian, Kaufmann's thiocyanogen value of, B., 1053.
 adulteration of, with vegetable ghee, B., 652.
 buffalo and cow, food value of, B., 1115.
 of Jersey cows, effect of frequent milking on, A., 647.
 detection of, in confectionery, B., 874.
 determination of, in foods, B., 1019.
 Buttermilk, flake, manufacture of, by Vogt method, B., 571.
 determination of casein in porridge of, B., 971.
 Butyl alcohol, formation of, by fermentation, A., 1541.
 manufacture of, (P.), B., 395.
 catalytically, (P.), B., 395.
 by *Clostridium butylicum*, B., 604.
 for fermentation, (P.), B., 650.
 stimulation of bacterial production of, by asparagine, A., 1282.
 adsorption of, by silica gel, A., 930.
 vapour-liquid equilibria of, with *n*-butyl acetate or acetone, B., 584.
 catalytic dehydration of, by alumina, A., 958.
 reaction of, with diphenylsuccinic anhydrides, A., 489.
 effect of, on viscosity of lacquers, B., 598.
 removal of, from musts, (P.), B., 170.
 determination of, in mixtures with acetone and ethyl alcohol, B., 617.
 Butyl alcohol, trichloro-, thermal analysis of mixtures of, with antipyrine, A., 703.
*iso*Butyl alcohol, electric moment of, A., 567.
 ebullioscopic constant of, A., 294.
 action of radon on aqueous solutions of, A., 1469.
sec.-Butyl alcohol in fusel oils, B., 745.
tert.-Butyl alcohol, purification and dehydration of, (P.), B., 138.
 as solvent in cryoscopy, A., 699.
tert.-Butyl alcohol, trichloro-. See Chlorotone.
 Butyl alcohols, catalytic dehydration of, A., 192.
n-Butyl bromide, preparation of, A., 1349.
 chloride, dipole moment of, A., 916.
 dodecyl ether, A., 483.
 formate and methoxyacetate, A., 473.
 γ -phenylpropyl ether, A., 483.
*iso*Butyl bromide, action of inorganic bases on, A., 1348.
 chlorosulphite, electric moment of, A., 1055.
 cyanide, α -chloro-, condensation of, with resorcinol, A., 1371.
 groups, introduction of, into phenols and cresols, A., 483.
sec.-Butyl iodide, decomposition and racemisation of, in gaseous state, A., 307.
 (+) *sec*.-Butyl cyanide and diselenide, A., 1230.
 (-) *sec*.-Butyl bromide, ethyl, *n*-butyl, and phenyl ethers, and disulphide, A., 1230.
tert.-Butyl chloride, hydrolysis of, A., 452.
 α -Butylacetoacetic acid, ethyl ester, A., 610.
p-*n*-Butylacetophenone, and its semicarbazone, A., 1369.
p-*iso*Butylacetophenone, A., 1369.
 β -*tert*.-Butyladipic acid, production of, (P.), B., 297.
 5-*sec*.-Butyl-5-allyl-2-thiobarbituric acid, A., 1507.
 Butylamine dipyrocatechol borate, (P.), B., 841.
 (-) *sec*.-Butylamine, benzoyl derivative, A., 1230.
n- and *sec*.-Butylamines, Raman spectra of, A., 146.
*iso*Butylamine, m.p. of, A., 815.
 vapour pressure curve of, A., 290.
 κ -Butylaminodecanesulphonic acid, (P.), B., 1131.
 β -*n*-Butylaminoethylaniline, and its picrate, (P.), B., 940.
 4-*n*-Butylamino-1:2-naphthaquinone, A., 585.
p-*sec*.-Butylaminophenol, production of, (P.), B., 894.
 2-Butylaminophenylstibinic acids, 5-nitro-, A., 876.
 4-*n*-Butylaminopyridine, 3-amino-, and 3-nitro-, A., 993.
 Butylaminothiomethanesulphonic acids, potassium salts, A., 332.
 3-Butylamino-*p*-tolyl β -diethylaminoethyl ether, (P.), B., 1132.
sec.-Butylammonium phosphate, A., 122.
n-Butyl-*n*-amylamine, (P.), B., 974.
tert.-Butyl-*tert*.-amylcarbinol, dehydration of, A., 62.
 1-Butylanthraquinone, 2-chloro-, (P.), B., 622.
 5-Butyl-(*d*-arabino)glyoxaline, 5- $\alpha\beta\delta$ -ultra-hydroxy-, oxidation products of, A., 759.
 5-Butyl-5-barbituracetylides, A., 1507.
m-*tert*.-Butylbenzaldehyde, A., 867.
tert.-Butylbenzaldehyde, 2-nitro-, and its 2:4-dinitrophenylhydrazones, A., 204.
 10-*tert*.-Butylbenzanthren-10-ol, and its ethyl ether, A., 752.
tert.-Butylbenzene, and *p*-nitro-, dipole moments of, A., 684.
tert.-Butylbenzene, amino- and nitro-derivatives, A., 482.
tert.-Butylbenzene-3:4-dicarboxylic acid, 5-nitro-, and its anhydride, A., 204.
 5-*n*-Butylbenzoic acid, 2:4-di-hydroxy-, A., 79.
 o-4-*n*-Butylbenzoylbenzoic acid, A., 859.
p-*tert*.-Butylbenzyl chloride, A., 342.
p-*tert*.-Butylbenzylallylmalonic acid, diethyl ester, A., 342.
 α -*p*-*tert*.-Butylbenzyl- Δ^7 -butenoic acid, A., 342.
N-Butyl-*p*-bromobenzenesulphon-*p*-anisidides, and β -hydroxy-, A., 193.
 α -Butyl- γ -butyrolactone, A., 474.
*cyclo*Butylcarbinol, reaction of, with benzene, in presence of aluminium chloride, A., 80.
 Butylcellulose, production of, B., 1135.
*iso*Butylcresols, A., 483.
 3-*tert*.-Butylcresols, A., 614.
 4-*tert*.-Butyl-*m*-cresol, production of, (P.), B., 940.
 hydrate, A., 614.
tert.-Butylcymene, production of, (P.), B., 182.
 Butyl- β -diethylaminoethylamine, (P.), B., 940.
 6-*iso*Butyldimethylphenols, and their salts, A., 483.
 o-*tert*.-Butyldiphenylamine, and its acetyl derivative, A., 482.
n-Butyl-*n*-dodecylamine, (P.), B., 974.

- Butylene, solubility of, in various solvents, A., 1067.
 catalytic polymerisation of, by phosphoric acid, B., 1035.
 manufacture of sulphated derivatives of, (P.), B., 715.
 determination of, B., 392.
- Butylene, chloro-, from reaction of methyl ethyl ketone and phosphorus pentachloride, composition of, A., 62.
- Δ^6 -Butylene, γ -bromo-, isolation of, A., 1480.
- $\alpha\delta$ -dibromo-, action of magnesium on mixture of, with ionone, A., 979.
- $\Delta\beta$ -Butylene, recovery of, from air, A., 1348.
 reaction of, with oxygen, A., 728.
- $\Delta\beta$ -Butylene, $\beta\delta$ -dichloro-, halogenation of, (P.), B., 395.
 $\alpha\beta\delta$ -trichloro-, production of, (P.), B., 395.
- $\Delta\gamma$ -Butylene, polymerisation of, (P.), B., 893.
 with alumina silica gel catalyst, A., 192.
 manufacture of hydrocarbons of high mol. wt. from, (P.), B., 182.
- $\Delta\gamma$ -Butylene, $\alpha\beta\gamma$ -tetrachloro-, production of, (P.), B., 395.
- isoButylene. See $\Delta\gamma$ -Butylene.
- ψ -Butylene, preparation of butadiene from, A., 324.
 chlorohydrin, preparation of, A., 62.
 ethers of, A., 606.
- Butylenes, preparation, isomerisation, and determination of, A., 958.
 polymerisation of, A., 1081.
- n*-Butylenes, isomerisation of, A., 192.
- Δ^1 -Butylene- $\alpha\delta$ -dicarboxylic acid, A., 746.
- β -isoButylethylpyridinium pierate, β -hydroxy-, A., 1131.
- 9-*n*-Butylfluorene, A., 741.
- 2-Butylfuran, and its mercurichloride, A., 866.
- 2-Butylfuran, 2- γ -hydroxy-, A., 1368.
- 4-*tert*-Butyl-2-furfuraldehyde, and its semicarbazone, A., 867.
- 4-*tert*-Butyl-2-furoic acid, and 5-bromo-, ethyl ester, A., 867.
- Butylglyceryl trinitrate, nitroso-, production and properties of, B., 1024.
- tert*-Butyl-*tert*-hexylcarbinol, dehydration of, A., 62.
- tert*-Butyl-*tert*-hexyl ketone, A., 62.
- 5-Butylhexyl- β -resorcylic acid, A., 1364.
- 3-isoButyl- β -hydroxyethylamino-*p*-tolyl methyl ether, manufacture of, (P.), B., 797.
- Butyl- β -hydroxyethyl-*m*-toluidine, manufacture of, (P.), B., 797.
- tert*-Butyl- β -methoxyethyl ether, manufacture of, (P.), B., 715.
- n*-Butyl- α -methylbutylhexoic amide and carbamide, (P.), B., 749.
- 2-Butyl- α -naphthol, A., 485.
- 1-*tert*-Butyl- β -naphthol, A., 614.
- Butylolamine, reactivity and p_H of, A., 849.
- sec-Butyl α -oximinoisopropyl ketone, A., 1481.
- 2-Butylcyclopentanone-2-carboxylic acid, ethyl ester, A., 342.
- 9-*n*-Butylphenanthrene, and its pierate, A., 741.
- 4-*n*-Butylphenol, 2-chloro-, and its α -naphthoate, (P.), B., 974.
- 2-isoButylphenol, A., 483.
- p*-*tert*-Butylphenylacetic acid, and its nitrile, A., 342.
- 10-*tert*-Butyl-*Bz*-1-phenylbenzanthrene-10-ol, A., 1124.
- 4-*n*-Butyl-*Bz*-1-phenylbenzanthrene, A., 1124.
- p*-*tert*-Butylphenyliminophenylmethyl *p*-*tert*-butylphenyl ether, A., 482.
- cycloButylphenylmethane, A., 80.
- p*-*tert*-Butylphenyl- α - and - β -naphthylamines, A., 482.
- p*-Butylphenyl styryl ketones, A., 1369.
- N*-Butylphthalimide, *N*- δ -hydroxy-, A., 619.
- 3-*n*-Butylpiperidine hydrochloride, A., 499.
- N*- β -Butylpiperidines, A., 1230.
- 2-isoButyl-4-isopropyl-*m*-cresol, and its *p*-nitrobenzoate, A., 433.
- 9-*n*-Butyl-3-4-pyridino-7:8:9-triazole, and its hydrochloride, A., 993.
- 2-Butylquinoxaline, $\alpha\beta\gamma\delta$ -tetrahydroxy-, derivative of, by action of sulphuric acid, and its derivatives, A., 224.
- 4-*n*-Butylresorcinol, preparation of, and its derivatives, and their germicidal properties, A., 79.
- 4-*tert*-Butylresorcinol, and its dimethyl ether, A., 614.
- 3-*tert*-Butylseleno- Δ^2 -cyclopentene 1:1-dioxide, A., 100.
- N*-Butylsuccinimide, δ -amino-, and its hydrochloride, A., 70.
- n*-Butylsulphonic acid, *n*-butyl and ethyl esters, A., 1105.
- (-)- β -Butylthiol, A., 1230.
- 3-*n*-Butylthiol-2-methylfuran-5-carboxylic acid, A., 497.
- p*-*tert*-Butylthiophenol, A., 73.
- 3-*tert*-Butyltoluene, 5-fluoro-, and its trinitro-derivative, A., 74.
- p*-*tert*-Butyltoluene, dipole moment of, A., 684.
- 4-*tert*-Butyltoluene, dinitro-, orientation of, and 2-nitro- and 6-nitro-2-amino-, and their derivatives, and 6-nitro-2-cyano- and -2-hydroxy-, A., 204.
- 4-*tert*-Butyltoluene-2-carboxylic acid, 6-nitro-, A., 204.
- (-)- β -Butyl-*p*-toluidine, A., 1230.
- n*-Butyltolylcarbarnides, A., 1488.
- Butylvinylacetylene, manufacture of, (P.), B., 347.
- 5-*tert*-Butyl-*m*-xylenes, fluoro-, and their dinitro-derivatives, A., 74.
- 5-*tert*-Butyl-*m*-4-xenol, A., 614.
- dl*-Butyramides, dihydroxy-, A., 72.
- Butyrdimethylamide, α -bromo-, action of magnesium phenyl bromide on, A., 1357.
- Butyric acid, effect of carbon monoxide on formation of, by fermentation, A., 125.
 formation of, by fermentation of arabinose and glucose, A., 1167.
 equilibria of, with sodium hydroxide and water, A., 303.
 and β -hydroxy-, oxidation of, in presence of guinea-pig liver slices, A., 1408.
 calcium salt, production of, by fermentation, (P.), B., 121.
 molecular compounds of, with its salts, A., 1323.
 2-bromocyclohexenyl ester, A., 1222.
 β -butadienyl ester, manufacture of, (P.), B., 347.
 butyl ester, catalytic production of, B., 395.
 determination of, in acetic acid, B., 839.
- Butyric acid, β -amino-, salts, A., 1486.
- γ -amino- β -hydroxy-, salts and derivatives of, A., 610.
- γ -bromo- α -amino-, hydrobromide, A., 966.
- $\alpha\beta$ -dichloro-, derivatives of, A., 64.
- γ -chloro- β -hydroxy-, preparation of, A., 606.
- Butyric acid, α -cyano-, ethyl ester, preparation of, and its conversion into veronal, A., 1357.
- β -hydroxy-, oxidation of, A., 1106.
 effect of various substances on formation of, in the organism, A., 780.
 production of, in fasting and diabetes, A., 382.
 in tissues after injection of acetone, A., 647.
- isoButyric acid, specific heats of aqueous mixtures of, A., 1200.
- isoButyric acid, α -chloro-, methyl ester, A., 1223.
- α -hydroxy-, β -methoxyethyl ester, (P.), B., 716.
 β -phenoxyethyl ester, A., 960.
 formal, production of, (P.), B., 624.
- n*- and iso-Butyric acids, distribution of, between two liquid phases, A., 577.
- Butyric acids, trihydroxy-, A., 1223.
- Butyrolactone phenylhydrazide, A., 327.
- γ -Butyrolactones, α -substituted, A., 474.
- isoButyrene, derivatives of, by reaction with sodium, A., 329.
- isoButyrophene, 2:4-dihydroxy-, A., 1128.
- Butyrylbenzylamide, γ -chloro-, A., 873.
- Butyrylcholine chloride, (P.), B., 287.
- 5-Butyryl-2:4-dimethyl-3-ethylpyrrole, A., 632.
- 3-Butyryl-2:4-dimethylpyrrole, A., 363.
- n*-Butyrylmesitylene, A., 198.
- 5-*n*-Butyryl-1-methyl-4-isopropylbenzene, 2-hydroxy-, A., 1369.
- Butyryl-*o*-nitrobenzylamide, γ -chloro-, A., 873.
- p*-Butyrylphenylcyclohexane, and its derivatives, A., 215.
- γ -isoButyryl- β -phenylpropane- $\alpha\alpha$ -dicarboxylic acid, ethyl ester, and its condensation, A., 83.
- 1-Butyrylpiperidine, β -hydroxy-, A., 71.
- 4-Butyrylresorcinol, 6-chloro-, and its derivatives, A., 79.
- Byturus tomentosus*, B., 1013.

C.

- Cabbages, influence of manuring on, B., 821.
 effect of ammonium compounds on soils and, B., 245.
 iodine in, A., 553.
 nutritive value of protein of, A., 1153.
 vitamin-C from juice of, A., 1429.
 influence of preparative processes on vitamin-C in, B., 921.
 control of club-root in, B., 742.
 with calcium cyanamides, B., 1061.
 control of root fly in, B., 516.
 non-arsenicals for control of worms on, B., 968.
 action of derris and pyrethrum on worms in, B., 327.
 boiled, vitamin-C in, B., 747.
 fermented. See Sauerkraut.
 red, pigment of, A., 674.
- Cables, electric, stranded copper for, (P.), B., 274.
 insulation of, (P.), B., 910.
 with asphalt-synthetic rubber mixtures, B., 773.
 with impregnated paper, (P.), B., 624.
 fireproofing of, (P.), B., 812.
 vulcanisation accelerators for rubber insulation of, B., 369.
 protective coatings and sheaths for, (P.), B., 639.

- Cables**, electric, lead coating of, B., 107.
for overhead telephone transmission, (P.), B., 108.
high-tension, insulation of, with paper, B., 1148.
ageing of insulation on, B., 363.
high-voltage, (P.), B., 910.
marine, rubber compositions for insulation of, (P.), B., 776.
tramway-feeder, electrolytic destruction of, B., 681.
- Cacao beans**, chloride, calcium, and magnesium in, B., 428.
formation of oxalic acid in, by hydrolysis, B., 428.
vitamins in shells of, B., 77.
determination in, of fat, B., 122.
- Cacao butter**, composition of, A., 64.
extraction of, by pressure and solvents, B., 317.
production of substitute for, B., 1149.
detection in, of foreign fats, B., 31.
- Cacao nibs**, disintegration of nibs of, by lime, (P.), B., 1067.
- Cacao shell**, effect of feeding, to cows on vitamin-D content of butter, A., 1287.
- Cacao trees**, effect of nutrients on composition of, B., 73.
- Cachexia**, cancerous, constitution of fat in, A., 1264.
- Cacodylic acid**, salts and esters, determination of, A., 851.
sodium salt, reactions of, A., 72.
- Cacœcia podana**, gases for control of larvae of, B., 1013.
- Cacotheline**, determination of tin with, A., 319.
- Cacti**, oily chloroplasts in, A., 1041.
- Cactus alkaloids**, A., 226, 635, 873, 1257, 1389.
- Cadinene group**, syntheses in, A., 756.
- Cadmium**, at. wt. and isotopes of, A., 802.
molecules, van der Waals, spectrum of, A., 1292.
isotopes of, A., 6, 802.
production of, (P.), B., 156.
recovery of, electrolytically, from zinc residues, B., 502.
spectrum of, A., 800.
intensity measurements in, A., 676.
excited by collision with molecular rays, A., 1045.
band spectrum of, A., 555.
ultra-violet spectrum of, A., 1045.
quenching of resonance radiation of, by foreign gases, A., 1438.
photo-electric properties and electrical resistance of films of, A., 1446.
electrodeposition of, (P.), B., 157.
electroplating with, of steel wool, (P.), B., 811.
specification of electrodeposited coatings of, B., 730.
electrical resistance of, at low temperatures, A., 815.
magnetic properties of solutions of, in molten cadmium chloride, A., 1063.
thermal expansion of, A., 918.
vapour, spectrum of, A., 423.
band spectrum of, A., 2.
fluorescence spectrum of, A., 2.
polarisation of fluorescence of, A., 2.
fluorescence of mixtures of zinc vapour and, A., 2.
high-frequency discharge in, A., 272.
solid, solubility of, in copper, A., 576.
solution of, in sulphuric acid, (P.), B., 362.
and its alloys, coating of, by dipping, (P.), B., 157.
- Cadmium**, removal of, from zinc ores, (P.), B., 1098.
poisoning of foods by, B., 251.
electrodeposited, structure and grain size of, B., 998.
- Cadmium alloys**, A., 291.
antifriction, structure of, B., 551.
bearing-metal, B., 459.
with alkaline-earth metals, production of, (P.), B., 236.
with antimony, A., 572.
solid, electrochemistry of, A., 936.
with bismuth, physical constants of, A., 693.
with bismuth and thallium, A., 576.
with copper and silver, A., 158.
for bearings, B., 552.
with lithium, A., 692.
with silver, ϵ -, γ -, and β -phases in, A., 439.
with tin, A., 440.
with tin and zinc, electrodeposition of, B., 233.
with zinc, electrodeposition of, from alkaline cyanide solutions, B., 857.
electroplating with, from acid sulphate solutions, B., 555.
- Cadmium compounds**, magnetic susceptibility of, A., 689.
- Cadmium arsenide**, structure of, A., 812.
- borofluoride**, A., 689.
chloride, activity coefficients of, in solution, A., 34.
heat of dilution of, A., 1462.
Debye theory in solutions of, A., 824.
fluoride, band spectrum of, A., 562.
halides, absorption and fluorescence of, A., 1187.
absorption spectra of, A., 1299.
optical absorption and association of, in aqueous solution, A., 444.
hydride, potential curve of, A., 1448.
iodide, compound of, with camphor, A., 1461.
nitrate, fused, magnetic double refraction and light scattering in, A., 1448.
oxide, magnetic properties of mixtures of chromic oxide and, A., 440.
magnetic properties of mixtures of, with ferric oxide, A., 158.
phosphide, structure of, A., 812.
sulphate, recovery of, from mixtures with thallium sulphate, (P.), B., 148.
electrolysis of, B., 857.
diffusion of, A., 443.
equilibrium of, with acetic acid and water, A., 36.
sulphide, colloidal, coagulation of, A., 444.
- Cadmium organic compounds**, complex, with 2:2'-dipyridyl, A., 312, 714.
- Cadmium diamyls**, A., 333.
sulphate, compound of, with benzidine, A., 613.
- Cadmium detection, determination, and separation** :—
detection of, A., 950.
as selenide, A., 837.
spectroscopically, in silver, B., 552.
determination of, A., 719.
with benzidine, A., 597.
electrolytically, A., 186.
with 8-hydroxyquinoline, A., 1473.
potentiometrically, A., 185.
with thiolbenzthiazole, A., 1216.
spectroscopically, in zinc oxide, B., 1043.
and its separation from copper, A., 720.
- Casalpinia bonducella**, seeds of, A., 1180.
- Cæsium**, nuclear magnetic moment of, A., 3, 272.
hyperfine structure in spectrum of, A., 556.
photo-effect in spectrum of, A., 555.
effect of methane hydrocarbons on spectrum of, A., 1438.
absorption spectrum of, absorbed on calcium fluoride, A., 2.
in presence of helium, A., 907.
effect of electric fields on, A., 137, 799.
effect of argon, mercury, potassium, and xenon on series spectrum of, A., 556.
L-series spectrum of, A., 424.
Hall effect in, A., 572.
self-ionisation of, at glowing tungsten and rhenium surfaces, A., 4.
vapour, absorption of light in, A., 137.
photo-electric effect of, A., 4.
anomalous dispersion in, A., 684.
adsorption of, on tungsten, A., 27.
- Cæsium alloys** with sodium, solidification diagram for, A., 22.
- Cæsium cobalt chloride**, structure of, A., 570.
rhenium chloride, A., 946.
thalline ennechloride, crystal structure of, A., 1060.
ennechlorodiarsenite, crystal structure of, A., 433.
ennechlorodithallite, crystal structure of, A., 686.
halides, diamagnetic susceptibilities of ions in, A., 569.
praseodymium sulphate, A., 180.
persulphate, crystal structure of, A., 152.
titanium alum, demagnetisation of, A., 815.
boro-, phospho-, silico-, and meta-tungstates, crystal structure of, A., 920.
- Cæsium organic compounds** with pyridine, A., 868.
- Cæsium detection and determination** :—
detection of, A., 1473.
with dipicrylamine, A., 1472.
by drop reaction, A., 1093.
with phosphomolybdic acid, A., 185.
spectrographically, in mineral waters, A., 463.
determination of, as the bismuth iodide, A., 1215.
in mineral waters, A., 719.
- Cæsium ions**, emission of, from Kunsman anode, A., 147.
- Caffeic acid** in prunes, A., 1434.
butyl, ethyl, and methyl esters, A., 489.
methyl ester, preparation of, A., 343.
determination of, colorimetrically, in coffee, B., 172.
- Caffeine**, in Brazilian medicinal plants, B., 1163.
compound of quinine hydrochloride and, (P.), B., 46.
removal of, from coffee, B., 875.
elimination of, from the circulation, A., 245.
effect of, on basal metabolism, A., 528.
cardiac effect of, A., 1155.
determination of, colorimetrically, A., 360.
micro-colorimetrically, A., 999.
in biological material, A., 397.
- Cainsmore** of Carsphairn igneous complex, A., 602.
- Cakes**, ingredients for, B., 697.
flour for. See Flour, cake.
temperature inside, B., 604.
retarding of staling of, (P.), B., 379.

Calanus finmarchicus, respiration of, A., 371.

Calaverite, crystal structure of, A., 286.

Calcareous disease. See under Diseases.

Calcene, reinforcing of rubber with, B., 113.

Calciferol, structure of, A., 1036, 1120.

near infra-red absorption spectrum of, A., 11.

treatment of low-calcium tetany with, A., 1430.

See also Vitamin-D.

Calcination, apparatus for, (P.), B., 434, 657.

Calcinosis, A., 885.

Calcite, secondary structure in, A., 1450.

separation of, from barite and fluorspar, B., 104.

selective incrustation of, A., 61.

infra-red spectrum of, A., 145.

phosphorescence of, A., 915.

thermal expansion of, A., 21, 1455.

decomposition of single crystals of, A., 308.

formed by plants, A., 553.

Calcium, at. wt. and isotopes of, A., 802.

theory of chromosphere of, A., 911.

isotopes of, A., 149.

in dwarf stars, A., 1046.

in stellar spectra, A., 800.

allotropy of, A., 1452.

electrolytic production of, A., 1330.

extraction of, from old Norwegian biotite, A., 191.

recovery of, from rare-earths by hydrolysis, A., 459.

spectrum of, A., 1, 2.

induced radioactivity of, A., 1186.

polarisation of resonance radiation of, A., 1183.

electric furnace ionisation effect with, A., 3.

atomic wave function of, A., 912.

m.p. of, A., 925, 1063.

vapour pressure of, A., 22.

clean-up of gases by, A., 27.

action of, on mercury vapour, A., 312.

agronomic importance of, B., 865.

availability of, from typical foods, A., 1154.

in diet, A., 1036.

effect of, on liver function, A., 1021.

distribution of, between skeleton and soft tissues, A., 1396.

resorption and excretion of, A., 1531.

effect of phosphatic substances on balance of, in animals, A., 1274.

influence of, and iodine on growing rats, A., 393.

in the human organism, A., 509.

mobilisation of, in the body, by pyrocatecholdisulphonates, A., 1020.

ionisation of, in body-fluids, A., 374.

in cerebrospinal fluid, A., 512.

in serum, effect of calcium, parathormone, and phosphorus in diet on, A., 409.

in beriberi and similar conditions, A., 107.

Calcium alloys with lead, production of, (P.), B., 107.

storage battery grids and plates of, B., 1001.

with silver, structure of, A., 1198.

Calcium salts, influence of, on growth of micro-organisms, A., 535.

in diet, effect of, on percentage of bone-ash, A., 670.

in nutrition, A., 393.

in China, A., 1409.

absorption of, in the body, A., 782.

cardio-stimulatory action of, A., 782.

Calcium salts, influence of, on narcosis of muscle and on irritability of motor nerve-endings, A., 525.

effect of parathyroid hormone and tuberculosis on, in serum and tissues, A., 1263.

insoluble, detection of, in tissues, A., 270.

recently-deposited, staining of, with alizarin-red, A., 647.

Calcium aluminate, A., 833.

dispersion in aqueous solutions of, A., 26.

Dicalcium aluminate, hydrates of, A., 49.

Calcium aluminates, effects of fluorides on thermal synthesis of, A., 49, 830.

purification of, (P.), B., 899.

aluminates and silicates, hydration and hardening of, B., 102.

aluminates, sulphatoaluminates, and chloroaluminates, hydrates of, A., 179.

arsenate, reduction of, by carbon, A., 714.

aurothiosulphate, preparation and properties of, A., 49, 366.

azide, thermal decomposition of, A., 453.

carbide, production of, B., 305, 493.

use of semi-coke in, B., 354.

density and gas yield of, B., 613.

equilibrium of, with lime, A., 1204.

decomposition velocity of, with water, A., 453.

hermetic containers for, B., 671.

use of, in organic syntheses, A., 729.

carbonate, production of, (P.), B., 355.

p_H of saturated solutions of, A., 585.

equilibrium of, with the sulphate and water, A., 583.

formation of hydrogen carbonates in mixtures of, with carbon dioxide, potassium sulphate, and water, A., 944.

velocity of decomposition of, A., 709.

thermal decomposition of, A., 312.

etch figures on, due to malic acid, A., 1194.

finely-divided, production of, (P.), B., 991.

determination of, in soils, B., 740.

hydrogen carbonate, decomposition of, in aqueous solution, A., 42.

chlorate, manufacture of, mortar for towers for, B., 852.

purification of, (P.), B., 306.

corrosion of iron, copper, and lead, in solutions of, B., 410.

chloride, formation of, in salt-deposit liquor, B., 628.

band spectrum of, A., 9, 562, 1051.

electrical conductivity of glycerol solutions of, A., 304.

hydrogen-ion mobility in aqueous mixtures of hydrogen chloride and, A., 1324.

electrodialysis of mixtures of alkali citrates with, A., 698.

production of crystals of, (P.), B., 672.

crystallisation of, from brine, (P.), B., 1092.

crystal structure of, A., 1060.

effect of sterilisation on B.P. solutions of, B., 605.

effect of, on tissue oxidation, A., 896.

hydrate, manufacture of, (P.), B., 452.

brine. See under Brine.

chloroarsenate, A., 1469.

chromate, preparation of, A., 1088.

deuteride, spectrum of, A., 279.

orthoferrite, equilibria of, with iron and iron oxide, A., 303.

Calcium ferrites, effect of calcium fluoride on thermal synthesis of, A., 1329.

fluoride, nuclear disintegration of, by high-energy protons, A., 142.

systems of, with lime and silica, A., 157.

manufacture of pigments from, (P.), B., 110.

analysis of, B., 146.

hydride, spectrum of, A., 279, 1187.

reaction of, with water, A., 1469.

hydrosilicate, formation of, in Portland cement, B., 407.

hydrosilicates, hydrothermal synthesis of, A., 50.

hydroxide, production of, in ammonia works, B., 20.

crystal structure of ignition products of, A., 17.

action of carbon dioxide on solutions of, A., 1088.

evaluation of, B., 543.

determination of, in cement, B., 455.

hypochlorite, manufacture of, plant for, B., 990.

stability of, out of contact with air, B., 990.

action of, on carbonyl and hydroxyl compounds, A., 958.

production of bleaching solutions from, B., 99.

as reagent in volumetric oxidation, A., 595.

concentrated, manufacture and uses of, B., 493.

stable, composition of, (P.), B., 899.

iodide, absorption of, A., 799.

nitrate, production of, (P.), B., 306, 629, 849.

vapour pressure and activity coefficient of aqueous solutions of, A., 302.

reaction of, with alkali chlorides in liquid ammonia, A., 178.

ammoniates of, A., 159.

nitrite, equilibrium of, with water, A., 1077.

oxide (*lime*), manufacture of, use of residues from, as fertilisers, B., 689.

perfect and imperfect combustion in kilns for, B., 707.

apparatus for drying, calcining, etc., of, (P.), B., 657.

manganese in, B., 589.

magnetic properties of mixtures of chromic oxide and, A., 440.

thermochemistry of systems of, with alumina and silica, A., 36.

solubility of sucrose and, in their solutions, A., 928.

equilibrium of, with alkali oxides, alumina, carbon dioxide, and silica, A., 1323.

with aluminium and ferric oxides and silica, A., 448.

in cement, B., 675.

with aluminium and potassium oxides, A., 448.

with calcium carbide, A., 1204.

with calcium sulphate and sulphur trioxide, A., 303.

with ferric oxide, A., 704.

with magnesium, aluminium, and ferric oxides, B., 547.

with manganese oxide and silica, A., 583.

with silica and with silica and calcium fluoride, A., 157.

with sulphur dioxide and water, A., 168.

hydration of, (P.), B., 590.

- Calcium oxide**, acceleration of slaking of, by electrolytes, B., 268.
determination of relative velocity of slaking of, B., 225.
reaction of, with sulphur dioxide, A., 312.
combined water in pastes of, B., 543.
high-calcium and -magnesium, efficacy of, B., 646.
waterproof, B., 1096.
determination of Vicat modulus of, B., 24.
determination of, in limestone and cement, B., 99.
in ochres, umbers, and terra di Sienna, B., 366, 465.
standardisation of ammonium acetate solution for, B., 497.
oxychloride, production of, B., 451.
phosphate, concentration of, (P.), B., 672.
specific heat of, A., 924.
adsorption of malt α -amylase on, A., 1162.
chlorination of, B., 848.
granular, manufacture of, (P.), B., 187.
phosphates, action of carbonic acid on, A., 1213.
orthophosphates, action of urea on, B., 590.
monohydrogen phosphate, manurial trials with, B., 602.
dihydrogen phosphate, production of, (P.), B., 147.
determination of, with carbamide, A., 463.
silicate, heat effect in formation of, A., 584.
solubility of, in water, A., 935.
Monocalcium silicate, hydrates of, A., 1469.
Tricalcium silicate, action of water on, B., 1096.
Calcium silicates, effect of fluorides on thermal synthesis of, A., 49, 1085.
heats of formation of, A., 36.
sulphate, manufacture of, and ammonium chloride, (P.), B., 672.
thermodynamics of, A., 583.
solubility of, in saturated solutions of potassium and sodium chlorides, A., 441.
equilibrium of, with ammonium sulphate and water, A., 704.
with lime and sulphur trioxide, A., 303.
with magnesium and potassium sulphates, A., 1461.
hydration and dehydration of, A., 591.
hydrated, finely-divided, production of, (P.), B., 187.
optical properties of double salts with ammonium sulphate and, A., 684.
plaster from, (P.), B., 62.
See also Drierite and Gypsum.
- Calcium organic compounds**, hetero-formato-salts, A., 195.
complex, with carbamic acid, etc., electrophoresis of, A., 693.
containing iron, A., 606.
therapeutical, manufacture of, (P.), B., 1069.
Calcium cyanamide, A., 332; B., 282.
manufacture of, (P.), B., 61.
granulation of, (P.), B., 270.
disintegration of, (P.), B., 1092.
effect of storage and method of use on action of, B., 1141.
effect of storage on manurial activity of, B., 687.
- Calcium organic compounds**:—
Calcium cyanamide, conversion of, in soils and in storage, B., 918.
effect of, on germinating seeds and on charlock in barley, B., 777.
comparison of nitrogenous fertilisers and, B., 687.
comparative trials of nitrogenous fertilisers and, on arable crops, B., 777.
effect of dicyanodiamide in fertilisers of, B., 325.
fertilising efficiency of mixtures of superphosphates and, B., 866.
nitric acid, in water-logged soils, B., 514.
toxicity of, A., 1412.
in soils, B., 325.
use of, on grassland, B., 38.
control of mosquito larvæ with, B., 384.
- Calcium detection and determination**:—
detection of, in presence of barium and strontium, A., 54, 719, 949.
determination of, as oxalate, A., 596, 1338.
as oxide, A., 1338.
photometrically, A., 54.
spectrographically, A., 185.
spectroscopically, A., 837.
volumetrically, with methylene blue, A., 1093.
digestion of biological materials for, A., 1044.
in biological liquids, A., 1552.
in blood, A., 1001.
spectrographically, in plant ash, A., 1179.
in soils, B., 37, 1059.
volumetrically, in water, B., 48.
- Calcespar**, mechanical twinning structure of, A., 1311.
- Calculi**, formation and crystal structure of, A., 1007.
effect of colloids on crystallisation and formation of, A., 580.
uric acid, non-production of, in rats, A., 518.
urinary, relation of vitamins to production of, A., 1427.
- Calculus dentalis supragingivalis**. See Teeth, tartar of.
- Calgon**, use of, in soaps, B., 462.
in dyeing, B., 224.
in wet-processing of textile materials, B., 846.
- Caliche**, evaluation of, by soil tests, B., 513.
- Calla**, root rot and soft rot of, B., 517.
- Callicrein**, A., 257.
purification of, A., 788.
effect of, A., 1173.
on cancer, A., 236.
on diuretin hyperglycæmia, A., 538.
on resorption of sodium chloride, A., 1173.
- Caloric values**, temperature correction in, B., 178.
- Calorimeters** for mixtures, A., 1096.
bomb, A., 187.
bomb and Junkers, comparison of results with, B., 212.
Bunsen, use of diphenylmethane in, A., 57.
electric, formula for calibration of, A., 839.
gas, (P.), B., 88.
liquid-flow, (P.), B., 711.
isothermal, A., 319.
thermocouple vacuum, A., 1474.
union, optimum volume of gas of, A., 951.
- Calorimetry**, advances in, A., 319.
micro-, A., 57.
- Calumba root**, alkaloids of, A., 99.
bitter principles of, A., 864, 1245, 1432.
- Calves**, lead poisoning in, A., 1414.
magnesium in, A., 386.
vitamin-D in nutrition of, A., 1430.
- Calycin**, constitution and synthesis of, A., 1238.
- Calycotretin**, and its acetyl derivative, A., 246.
- Calycotrin**, and its derivatives, A., 246.
identity of, with thapsin, A., 1040.
- Calycotris floribunda**, anthelmintic constituent of leaves of, A., 246.
- Calythrix**, essential oils of, B., 573.
- Camera**, electron diffraction, A., 839.
X-ray, for low temperatures, A., 1340.
- Camomile flowers**, saccharides of, A., 906.
determination in, of essential oil, B., 429.
- Camphanes**, configuration of derivatives of, A., 348.
- trans- α -apoCamphane-7-carboxylic acid*, 2-amino-, and 2-bromo-, derivatives of, A., 350.
- β -Camphanylethyl alcohol**, and its hydrogen phthalate, A., 219.
- Camphene**, cryoscopic constant of, A., 436.
racemisation during transformation of, to isoborneol, A., 89.
transformation of, into isobornyl esters, A., 1375.
- apoCamphenecarbinol*, A., 865.
- apoCamphenecarboxylic acid*, and its methyl ester, A., 350.
- Camphenilone**, cryoscopic constant of, A., 436.
glycols from, by reaction with dimagnesium derivative of acetylene, A., 349.
- Camphenilonylacetic acid**, and its methyl ester and methyl ester semicarbazone, A., 625.
- Campherol**, chemistry and pharmacology of, A., 89.
- Camphor**, synthesis of, (P.), B., 1085, 1133.
from pinene, A., 496.
manufacture of, raw materials for, B., 1036.
from *Ocimum canum*, B., 523.
ultra-violet rotatory dispersion of, A., 148.
optical activity of, in alcoholic solution, A., 14.
optical stability of, A., 348.
oxidation product of, A., 754.
reaction of, with acetylene, A., 349.
compounds of, with mercuric chloride and cadmium iodide, A., 1461.
derivatives, coloration of solutions of, by light, A., 458.
mercury derivatives of, A., 755.
use of, as cryoscopic solvent, A., 1476.
degradation of, in the animal organism, A., 496, 865.
Japan, cardiostimulant effect of, A., 865.
ledum, A., 866.
natural and synthetic, toxicity of, towards guinea-pigs, A., 526.
determination of, in galenicals with 2:1-dinitrophenylhydrazine, B., 253.
volumetrically, by hydroxylamine, A., 1516.
- Camphor**, α -bromo-, reaction of, with Grignard reagents, A., 349.
3-bromo-, and its 10-mercurihalides, A., 755.
3-chloro-, 10-mercurichloride, A., 755.
3-chloro-10-iodo-, A., 755.

- Camphor**, α -halogeno-derivatives, rotatory dispersion of, A., 810.
 hydroxy-derivatives, and their derivatives, A., 89.
 4-hydroxy-, *p*-nitrobenzoate, A., 496.
trans- π -hydroxy-, and its derivatives, A., 865.
 thio-. See Thiocamphor.
Camphor group, homologues of, A., 625.
 β -apocamphor-1-aldehyde, and its mono- and di-semicarbazides, A., 90.
Camphorcarboxylic acid, salts, action of heat on, A., 454.
 π -apocamphor-7-carboxylic acid, and its derivatives, A., 89.
**l*-cis- π -apocamphor-7-carboxylic acid*, A., 350.
Camphoric acid, salts, compounds of, with di- and tri-methylxanthines, (P.), B., 287.
 derivatives, pharmacology of, A., 895.
d- and *l*-Camphoric acids, rotatory power of, A., 684.
Camphoro- α -nitrile, reactions of, A., 754.
Camphorsulphinic acids, 3-bromo-, and 3-chloro-, A., 755.
Camphor- π -sulphonamides, α -bromo-, and α -chloro-, racemates of, A., 90.
Camphorsulphonic acid, salts, used in hypodermic therapy, B., 653.
 alkaloid salts, A., 1375.
 tetramethylammonium salt, A., 496.
d-Camphor-10-sulphonic acid, reduction of ketimines of, A., 1503.
 amine salts, anomalous mutarotation of, A., 1118.
 ketimine formation from, A., 1246.
p-acetamidoanil, A., 1118.
Camphor- π -sulphonyl chloride, α -bromo-, racemate of, A., 90.
Camphortetrazole, production of, (P.), B., 830.
 β -Camphorylcarbinol, and its benzoate, A., 625.
Canaline, apparent dissociation constant of, A., 1321.
Canavanine, A., 966.
 apparent dissociation constant of, A., 1321.
 nutritive value of, A., 1407.
Cancer, growth of, in relation to enzyme activity, A., 381.
 production of, by hydrocarbons, A., 774, 1268.
 structure of substances producing, A., 792.
 surface tension of substances producing, A., 649.
 chemistry of, A., 1525.
 effect of combinations of iron and ascorbic acid on, A., 1526.
 effect of, on blood-corpuscles and pigment, A., 1391.
 carbohydrate metabolism in, A., 514.
 effect of X-rays on carbohydrate tolerance in, A., 1008.
 precipitation of cholesterol in plasma of, A., 381.
 enzymic efficiency in, A., 1008.
 glycolysis in, A., 885.
 β -glycerophosphatase of blood-corpuscles in, A., 1148.
 hormones in, A., 236.
 mineral metabolism in, A., 1525.
 chemical change of plasma-albumins in, A., 381.
 in relation to reproduction, A., 515.
 flocculating power of sera in, A., 1148.
 serum in, A., 1269.
 sex hormones, sterols, and, A., 1400.
- Cancer**, tyrosine and cystine in proteins of fluids in, A., 1001.
 principle in urine of, acting on adrenal cortex, A., 381.
 gonadostimulin in urine of, A., 381.
 phenols in urine in, A., 648.
 effect of gonadotropic substances from pregnancy urine on, A., 885.
 biochemical control of, A., 107.
 preparation of anti-sera for, A., 236.
 effect of ferric chloride-ascorbic acid on, A., 775.
 therapy with iron-vitamin-C preparations in, A., 1401.
 effect of radium treatment on blood in, A., 649.
 treatment of, with snake venom, A., 236, 515.
 benzopyrene, of white mice, liver substance inhibiting, A., 1526.
 guinea-pig, polypeptidaemia index in, A., 1526.
 coagulant action of tissue extracts in, A., 514.
 in mice, effect of organic peroxides on, A., 1526.
 effect of vitamin-C on growth of, A., 381.
 rat, effect of heavy water on viability of, A., 381.
 tar, action of serum in, on fluorescence of uranine, A., 1526.
 uterine, enzymes in, A., 514.
 gelling of lactic acid not specific test for, A., 775.
 modification of Weltmann reaction in, A., 1526.
Canchalagna panamena, constituents of, A., 133.
Candles, manufacture of, (P.), B., 31, 109, 365*.
 coating for, (P.), B., 277.
 beeswax, moulding of, (P.), B., 319.
Canning, corrosion of tin plate in, B., 552.
 bacteriology of, B., 1021, 1162.
 of foods, (P.), B., 286, 380.
 bacteriology of, B., 173, 476, 572, 652, 827.
Cannizzaro reaction, peroxide effect in, A., 1238.
 preparation of aromatic alcohols by, A., 972.
 in aliphatic and arylaliphatic series, A., 491.
Caoutchouc. See Rubber.
Capillarscope, A., 1342.
Capillarscopy, A., 1342.
Capillary action, propagation of, A., 1458.
 analysis. See under Analysis.
 systems, A., 284, 443, 1200.
Capons, response of combs of, to androsterone, A., 1033.
 effects of folliculin and of ovarian transplants on comb and spur growth in, A., 666.
Capsanthin, constitution of, A., 495.
Capsicum annuum. See Pimento, perfection.
Capsids, green, control of, with tar-petroleum oil winter washes, B., 472.
Capsorubin, colouring matters of, A., 495.
Caramel, colloids in, A., 1485.
Caraway, oil content of, B., 1068.
Carbamic acid, alkali salts, production of, (P.), B., 494.
 alkali and alkaline-earth salts, production of, (P.), B., 226.
 sodium salt, thermal decomposition and heat of formation of, A., 36.
Carbamide, structure of, A., 286, 1306.
- Carbamide**, formation of, from ammonium cyanate, A., 1207.
 in oxidation of fructose, A., 1109.
 synthesis of, from carbon dioxide and ammonia, A., 966, 1357; B., 12.
 manufacture of, prevention of corrosion of steel vessels for, (P.), B., 907.
 molecular volume of, in complex ions, A., 684.
 viscosity of mixtures of, with urethane, A., 693.
 saturated solutions of, in liquid ammonia, A., 159.
 dissociation of, in dilute solutions, A., 702.
 equilibrium of, with antipyrine and urethane, A., 448.
 influence of, on velocity constants of reactions, A., 1467.
 catalytic conversion of cyanamide into, A., 456.
 condensation of, with formaldehyde, B., 194; (P.), B., 240, 736, 1005, 1057.
 action of, on calcium phosphate, B., 590.
 salts of, A., 737.
 nitrate, physicochemical properties of, A., 291.
 phosphate, A., 72.
 crystal structure of, A., 18.
 resins from hydrocarbons and, (P.), B., 112.
 uses of, in textile processes, B., 846.
 determination of, microchemically, A., 1140.
 See also Urea.
Carbamides, action of, with thionyl chloride, A., 854, 1359.
 anasthetic action of, A., 1155.
 cyclic, action of hydrazine on, A., 869.
 therapeutic, manufacture of, (P.), B., 878*.
 colour reactions of, with diacetyl and its dioxime, A., 609.
 determination of, in propellant explosives, B., 334.
p-Carbamidoazoxybenzenes, A., 338.
c-Carbamidolysine, (P.), B., 205.
 δ -Carbamido-ornithine, (P.), B., 205.
 Carbamidovaleric acid, A., 1356.
 Carbamylcholine derivatives, A., 1228.
 3-Carbamyl-2:4-dimethylpyridine-5-carboxylic acid, 6-hydroxy-, A., 737.
 Carbamylmethylbenzimidazole-5-arsinic acid, A., 502.
 α -Carbamyl- β -phenylcarbamylicinnamamide, A., 1365.
 α -Carbamyl- β -phenylcarbamylic- β -phenylpropionamide, A., 1365.
 α -Carbamyl- α' -phenylmaleinanil, A., 1365.
 4-Carbamyl-3-phenyl-2-pyrrolidone, 3-hydroxy-5-imino-, A., 1365.
 α -Carbamyl- α' -phenylsuccinanil, A., 1365.
 Carbanilide, *o*-hydroxy-, and its ethers, ultra-violet absorption spectra of, A., 145.
 Carbarsone, action of, on tissue culture cells, A., 1161.
 Carbazides, colour reactions of, with diacetyl and its dioxime, A., 609.
 Carbazole, separation of, from anthracene, (P.), B., 894.
 derivatives, manufacture of, (P.), B., 1134.
mono- and 9:9'-disulphides, A., 634.
 Carbazole, 3-amino-2-thiol-, and its zinc salt, A., 634.
 4:4'-diiodo-, A., 613.
 Carbazoles, Gracbe-Ullmann synthesis of, A., 226.
 Carbazole series, Friedel-Crafts reaction in, A., 990.
 Carbazole-3-carboxy-*p*-aminobenzoylacetyl-anilide, 2-hydroxy-, (P.), B., 14.

- Carbazole-3-diazonium salts, preparation of, and their antiseptic action, A., 1283.
- 5-Carbethoxy-3-acetyl-4:3':5'-trimethyl-4'-β-carboxyethylpyrromethene hydrobromide, A., 632.
- 5-Carbethoxy-3-acetyl-4:3':5'-trimethyl-4'-ethylpyrromethene salts, A., 632.
- 5-Carbethoxy-3-acetyl-4:3':5'-trimethyl-4'-ethylpyrromethene ketoxime hydrobromide, and its derivatives, A., 632.
- Carbethoxy-*l*(+)-alanine, A., 850.
- N*-Carbethoxy-β-aminocrotonic acid, ethyl ester, A., 1483.
- 2-Carbethoxyamino-4:5-dimethylphenyl-*l*-arabinsamine, A., 359.
- 2-Carbethoxyamino-4:5-dimethylphenyl-*d*-deoxyribamine, A., 1510.
- 2-Carbethoxyamino-4:5-dimethylphenyl-*d*-lyxamine, A., 1134.
- 2-Carbethoxyamino-4:5-dimethylphenyl-*l*-rhamamine, A., 760.
- N*-2-Carbethoxyamino-4:5-dimethylphenyl-*d*-ribamine, A., 631, 760.
- 2-Carbethoxyamino-4:5-dimethylphenyl-*l*-ribamine, A., 1134.
- 2-Carbethoxyamino-5-methylphenyl-*l*-arabamine, A., 760.
- 2-Carbethoxyamino-5-methylphenyl-*d*-galactamine, A., 760.
- 2-Carbethoxyamino-5-methylphenyl-*d*-glucamine, A., 760.
- 2-Carbethoxyamino-5-methylphenyl-*d*-mannamine, A., 760.
- 2-Carbethoxyamino-5-methylphenyl-*d*-ribamine, A., 1510.
- 2-Carbethoxyaminophenyl-*l*-arabinsamine, A., 359.
- 2-Carbethoxyaminophenyl-*d*-ribamine, A., 1510.
- (-)-Carbethoxy-*l*(+)-aminopropionic acid, ethyl and phenyl esters and derivatives of, A., 850.
- ε-Carbethoxy-*n*-amyl peroxide, A., 607.
- p*-Carbethoxybenzeneazotriphenylmethane, A., 78.
- 3-Carbethoxy-1-(3':5'-*di*bromophenyl)pyrazole, 4-hydroxy-, A., 1231.
- 5-Carbethoxy-3-butyryl-2:4-dimethylpyrroles, A., 362.
- 3-Carbethoxy-1-(3':5'-*di*chlorophenyl)pyrazole, 5-bromo-4-hydroxy-, and 4-hydroxy-, A., 1231.
- 5-Carbethoxy-2:4-dimethyl-3-butyrylpyrrole, A., 363.
- 4'-Carbethoxy-3:3'-dimethyl-4-β-carboxyethylpyrromethene, 5-bromo-, hydrobromide, A., 633.
- 5-Carbethoxy-2:4-dimethyl-3-(2:2'-*dicyano*-cyclopropyl)pyrrole, and its derivatives, A., 994.
- 5-Carbethoxy-2:4-dimethyl-3-α-*dicarboxy*-ethylpyrrole, derivatives of, A., 363.
- 2-Carbethoxy-4:5-dimethylphenyl-*d*-arabamine, A., 1134.
- 5-Carbethoxy-2:4-dimethylpyrrole-3-acrylic acid, esters, pyrazolines from, A., 994.
- 5-Carbethoxy-2:4-dimethylpyrrole-3-fumaric acid, methyl esters, A., 993.
- 5-Carbethoxy-2:4-dimethylpyrrole-3-maleic acid, and its methyl and *diisopropyl* esters and anhydride, A., 993.
- 5-Carbethoxy-2:4-dimethylpyrrole-3-maleic anil, A., 993.
- 5-Carbethoxy-2:4-dimethylpyrrole-3-methylmalonic anil, A., 994.
- 5-Carbethoxy-2:4-dimethylpyrrole-3-*N*-phenylbromomaleic imide, A., 994.
- 5-Carbethoxy-2:4-dimethylpyrrole-3-pyrazolinedicarboxylic acid, dimethyl ester, A., 994.
- 5-Carbethoxy-2:4-dimethylpyrrole-3-succinic acid, dimethyl ester, derivatives of, and its anil, A., 993.
- 5-Carbethoxy-2:4-dimethylpyrrole-3-sulphonic acid, and its potassium salt, A., 627.
- Carbethoxydivaricic acid, and its chloride, A., 978.
- α-Carbethoxyethyl sulphite, A., 1223.
- α-Carbethoxy-α'-ethyladipic acid, diethyl ester, and its condensation with sodium ethoxide, A., 1224.
- α-Carbethoxyethylphthalic acid, methyl ester, A., 607.
- 1-Carbethoxy-2-cyclohexylphenylacetic acid, 2-hydroxy-, and its ethyl ester and lactone, A., 1496.
- 3-Carbethoxy-4-hydroxy-1-(bromonitrotolyl)pyrazoles, and 5-chloro-, A., 502.
- 3-Carbethoxy-4-hydroxy-1-nitrotolylpyrazoles, and 5-bromo-, and 5-chloro-, A., 501, 502.
- N*-Carbethoxyketimines, preparation of, A., 1483.
- (-)-Carbethoxy-*l*(+)-lactic acid, and its ethyl and phenyl esters and derivatives, A., 850.
- 2-Carbethoxymethoxymethyl-3-methyl-4-ethylpyrrole, A., 632.
- 5-Carbethoxy-4-methyl-2-bromomethylpyrrole-3-fumaric acid, dimethyl ester, and its derivatives, A., 993.
- 5-Carbethoxy-4-methyl-2-bromomethylpyrrole-3-*N*-phenylbromomaleic imide, A., 994.
- 5-Carbethoxy-4-methyl-2-bromomethylpyrrole-3-succinic acid, dimethyl ester, A., 994.
- 5-Carbethoxy-4-methyl-2-chloromethylpyrrole-3-fumaric acid, dimethyl ester, A., 993.
- 5-Carbethoxy-4-methyl-2-dichloromethylpyrrole-3-fumaric acid, dimethyl ester, A., 993.
- 5-Carbethoxy-4-methyl-2-ethoxymethylpyrrole-3-*N*-phenylbromomaleic imide, A., 994.
- 2-Carbethoxy-3-methyl-4-ethylpyrrole, A., 632.
- 4-Carbethoxy-2-methyl-3-ethylpyrrole-5-carboxylic acid, methyl ester and *dichloro*-derivative, A., 1134.
- 1-Carbethoxy-4-methylcyclohexane-2-α-(α-cyanoglutaric acid), ethyl ester, A., 756.
- 1-Carbethoxy-4-methylcyclohexane-2-(α-cyano-α'-methylsuccinic acid), ethyl ester, A., 756.
- 1-Carbethoxy-4-methylcyclohexane-2-α-cyanosuccinic acid, ethyl ester, A., 756.
- 1-Carbethoxy-4-methylcyclohexane-2-α-glutaric acid, ethyl ester, A., 756.
- 1-Carbethoxy-4-methylcyclohexane-2-α'-methylsuccinic acid, ethyl ester, A., 756.
- 1-Carbethoxy-4-methylcyclohexane-2-α-succinic acid, ethyl ester, A., 756.
- 3-Carbethoxy-1-methylindole-2-acetic acid, and its ethyl ester, A., 222.
- 5-Carbethoxy-4-methyl-2-methoxymethyl-3-dicarboxypyrazolinylypyrrole, dimethyl ester, A., 993.
- 5-Carbethoxy-4-methyl-2-methoxymethylpyrrole-3-fumaric acid, dimethyl ester, A., 993.
- 5-Carbethoxy-4-methyl-2-methoxymethylpyrrole-3-*N*-phenylbromomaleic imide, A., 994.
- 5-Carbethoxy-4-methyl-2-methoxymethylpyrrole-3-succinic acid, dimethyl ester, A., 993.
- 5-Carbethoxymethyl-3-methyl-4-ethylpyrrole, A., 632.
- 3-Carbethoxy-1-(nitrotolyl)-4-pyrazolones, 5:5'-*dichloro*-, A., 502.
- Carbethoxyoxamic acid, and its amide, A., 360.
- 1-Carbethoxycyclopentane-2-acetonitrile, A., 748.
- α-(*trans*-2-Carbethoxycyclopentyl)-γ-phenylbutyric acid, α-cyano-, ethyl ester, A., 1496.
- α-2-Carbethoxy-1-cyclopentylsuccinic acid, α-cyano-, ethyl ester, A., 748.
- 5-Carbethoxyphenylarsinic acid, 2-chloro-, A., 637.
- p*-Carbethoxyphenyl-*p*-benzoquinone, A., 86.
- α-Carbethoxy-γ-phenyl-β-benzylbutyric acid, ethyl ester, A., 746.
- o*-Carbethoxyphenyl-*N*-*p*-chlorophenylurethane, A., 993.
- α-Carbethoxy-β-phenyl-β-ethylbutyric acid, ethyl ester, A., 746.
- α-Carbethoxy-β-phenyl-α-methylglutarimic acids, A., 490.
- α-Carbethoxy-β-phenyl-α-methylglutarimides, A., 490.
- α-Carbethoxy-δ-phenyl-β-methylvaleric acid, ethyl ester, A., 746.
- O*-Carbethoxyquinone *mono*- and *di*-methiodides, A., 366.
- 4'-Carbethoxy-4:3':5'-trimethyl-3-ethylpyrromethene, 5-bromo-, hydrobromide, A., 633.
- Carbethylenedicarbamide, A., 360.
- Carbides, crystal structure of, A., 17.
- manufacture of cakes of, (P.), B., 226.
- Carbimides, absorption spectra and dissociation energies of, A., 1299.
- aromatic, reaction of, with organic acids, A., 336.
- 5-Carbidimido-*o*-xylene, 4-nitro-, A., 1382.
- Carbinols, acetylenic, transformation products of, A., 745.
- Carbobenzyloxy-β-alanine, A., 628.
- Carbobenzyloxy-β-alanyl hydrazide, A., 628.
- Carbobenzyloxycarnosine, A., 629.
- N*-Carbobenzyloxyglutamic acid, α-methyl ester, and its compound with cysteyleglycine ethyl ester, A., 1110.
- Carbobenzyloxy-*l*-isoglutamine, A., 1416.
- N*-Carbobenzyloxy-γ-glutamylcysteine, A., 1111.
- N*-Carbobenzyloxy-γ-glutamylcysteylglycine, A., 1110.
- Carbobenzyloxyglycyl-*l*-asparagyl-α-glycine, ethyl ester, A., 1416.
- α-Carbobenzyloxyglycyl-ε-carbobenzyloxy-*l*-lysine, and its derivatives, A., 1417.
- Carbobenzyloxyglycyl-*l*-glutamyl-α-glycine, and its ethyl ester, A., 1416.
- Carbobenzyloxyglycyl-*d*- and -*l*-leucylglycines, methyl esters, A., 1416.
- Carbobenzyloxyglycylsarcosyldiglycine, A., 1416.
- N*-Carbobenzyloxy-*l*-*p*-leucine, and its derivatives, A., 1228.
- Carbobenzyloxy-*l*-leucylglycine, and its ethyl ester, A., 1416.
- Carbobenzyloxy-*d*- and -*l*-leucylglycylglycines, A., 1416.
- ε-Carbobenzyloxy-*l*-lysine, and its derivatives, A., 1417.
- Carbobenzyloxytetraglycine, A., 1416.
- Carbobenzyloxytriglycine, A., 1416.
- Carbocyanine bromines and iodides, production of, (P.), B., 842, 843.
- Carbocyanines, preparation of, A., 630.
- sensitisation of photographic emulsions with, (P.), B., 334.

- Carbocyclic compounds, aminoalkylamino-derivatives of, A., 482.
aromatic, energy relations in, A., 480, 612.
- 2-Carbo- γ -di-*n*-butylaminopropoxydiphenyl, 5-amino-, production of, (P.), B., 878.
- 2-Carbo- β -diethylaminoethoxydiphenyl, 5-amino-, production of, (P.), B., 878.
- 3-Carbo- β -diethylaminoethoxydiphenyl, 4-hydroxy-, hydrochloride, manufacture of, (P.), B., 878.
- Carbodiophenylimide, reaction of, with sodium-maleonic ester, A., 205.
- Carbohydrase, relation between p_H and source of, A., 402.
- Carbohydrates, A., 1354.
structure of, A., 283.
X-ray study of, B., 173.
molecular structure of, A., 1354.
isotopic exchange in, A., 1212.
concentration of heavy isotopes in, A., 1212.
concentration of heavy water in, A., 944.
rotatory dispersion in, A., 66, 568.
oxidation-reduction potential in hydrolysis of, A., 585.
mechanism of oxidation of, A., 476.
catalytic oxidation of, in presence of iron pyrophosphates, A., 309.
condensation of, with furfuraldehyde, A., 847.
resinous condensation products from, (P.), B., 1056.
reactions of, in liquid ammonia, A., 68.
blue fluorescence from action of sulphuric acid on, A., 808.
production of fatty acid esters of, (P.), B., 694.
additive compounds of, A., 964.
preparation of methylglyoxalino from, A., 501.
application of, in synthesis of heterocyclic compounds, A., 1381.
production of solvents by fermentation of, (P.), B., 696.
biochemistry of, A., 111, 402.
in leaves, A., 133.
synthesis of, by yeast, A., 1164.
formation of, from fat in rat's liver, A., 523.
from glycerophosphates in rat's liver, A., 1273.
relative nutritional value of, A., 390.
biological oxidation of, A., 241, 255.
gastric digestion of, and of proteins, A., 1407.
value of fats and, in utilisation of proteins, A., 1015.
anaerobic breakdown of, in frog's ventricle, A., 110.
metabolism of. See under Metabolism.
specific dynamic action of, A., 1016.
in diet of albino rats, A., 651.
tolerance of, during carbohydrate starvation, A., 390.
hygroscopic, drying of, (P.), B., 123.
physiologically important, reducing powers of, A., 847.
polymeric, osmometric study of dilute solutions of, A., 201, 331, 965.
xanthate formation of, A., 736.
reserve, synthesis of, by yeast, A., 1281.
at high altitudes, A., 529.
specific, of blood-groups, A., 1000.
determination of, in leaves, A., 904.
in plants, A., 1435.
in plant material, A., 673.
in tissues, A., 1523.
- δ -Carbomethoxyaminovaleric acid, A., 1356.
- 5-Carbomethoxyamino-*NN*-dimethylene-sulphurous acid, 2-hydroxy-, sodium salt, A., 997.
- 5-Carbomethoxyanilino-*N*-methylenesulphoxylic acid, hydroxy-, sodium salt, A., 100.
- 5-Carbomethoxyanilino-*N*-methylenesulphurous acid, 2-hydroxy-, sodium salt, A., 100.
- 2-Carbomethoxy-5-carbomethoxy-3-(2-cyano-2'-carbomethoxycyclopropyl)-4-methylpyrrole, A., 994.
- 2-Carbomethoxy-5-carbomethoxy-4-methyl-3-(2,2'-dicyanocyclopropyl)pyrrole, A., 994.
- α -Carbomethoxybenzoic acid, A., 484.
- 5-Carbomethoxy-2,4-dimethylpyrrole-3-maleic anil, A., 994.
- α -Carbomethoxyethyl carbonate, A., 1223.
- endo-cis*-3:6-*endo*-Carbomethoxymethylene-hexahydrophthalic acid, bromohydroxy-, lactones, A., 212.
- endo-cis*-3:6-*endo*-Carbomethoxymethylene- Δ^4 -tetrahydrophthalic anhydride, A., 212.
- 5-Carbomethoxy-3-methyl-4-ethylpyrrole, A., 632.
- 1-Carbomethoxy-1-methylcyclohexane-2-acetic acid, and its ethyl hydrogen ester, A., 859.
- 4-Carbomethoxyoxy-3:5-dimethoxybenzaldehyde, A., 343.
- α -Carbomethoxyphenyl cholesterylcarbonate, A., 745.
- α -Carbomethoxy- β -phenyl- α -methylglutarimides, A., 490.
- 2-(β -Carbomethoxypropionyl)-1-*n*-octyl- Δ^1 -cyclopentene, A., 1497.
- α -Carbomethoxyisopropyl carbonate, A., 1223.
- Carbon, atomic mass of, A., 677.
at. wt. of, A., 425.
atoms, binding energy and electronic states of, A., 1058.
chains, fission of, A., 727.
chains and rings, migration of halogen in, A., 1368.
isotopes, masses of, A., 1051.
replacement of, in Raman effect, A., 1190.
rings, many-membered, A., 202.
properties of, at arc temperature, B., 558.
K line in spectrum of, A., 1046.
Swan system in spectrum of, A., 1183.
and its compounds, K_α X-ray spectra of, A., 4.
ultra-violet wave-length standards for, A., 799.
radioactivity of, A., 1442.
induced by protons, A., 1297.
identification of radio-elements produced from, by deuteron bombardment, A., 559.
disintegration of, by neutrons, A., 277.
radiative capture of protons by, A., 1186.
 γ -rays from, on bombardment by deuterons, A., 1442.
net densities and X-ray study of, B., 1079.
electrolytic transport of, in steel, A., 1205.
heat of sublimation of, A., 925, 1462.
solid, action of, with metallic oxides, A., 592.
adsorption and oxidation of succinic acid by, A., 1467.
combustion of, A., 180.
effect of ash on, B., 580.
wet oxidation of, B., 789.
reactivity of, A., 453.
determination of "activity" of, with permanganate, B., 1079.
- Carbon, reduction of alkaline-earth arsenates by, A., 313.
reduction of vanadium oxides by, A., 313.
articles of, for corrosive liquids, (P.), B., 982.
for filters, manufacture of, (P.), B., 1076.
electrical conductivity of hygroscopic materials coated with, B., 96.
dissolved in molten iron, reaction of, with oxides, A., 1090.
particles, absorption of, from gastrointestinal tract, A., 1405.
active, production of, (P.), B., 342, 616, 1082.
from coal, lignite, peat, etc., (P.), B., 582, 583.
from wood, lignite, or anthracite, B., 707.
electric charge of, A., 933.
adsorption by, of ethane, methane, and propane, A., 696.
of hydrogen, A., 696, 940.
of iodine vapour, A., 441.
of mercury vapour, B., 752.
influence of electrolytes on rate of settling of, B., 1079.
catalytic action of, on terpenes and related compounds, A., 1375.
treatment of sewage with, B., 1129.
decolourisation of sugar juice with, B., 1159.
treatment of trade wastes with, B., 832.
use of, in water purification, B., 528.
purification of water with, in the tropics, B., 1168.
revivification of, (P.), B., 757.
positively- and negatively-charged, absorption of thorium-*B* by, A., 1069.
spent, extraction of sugar from, B., 518.
adsorptive, recovery of, from petroleum refinery wastes, (P.), B., 305.
properties and uses of, B., 789.
graphitic, production of, (P.), B., 936.
lustrous, manufacture of electric resistances of, (P.), B., 29.
organic, determination of, in soils, B., 1108.
- Carbon tetrabromide, crystalline, molecular size of, A., 156.
tetrachloride, structure of, A., 153.
production of, from methane, B., 938.
discontinuities in absorption spectrum of, A., 136.
intensity of Raman effect in, A., 1445.
X-ray and electron diffraction by, A., 1061.
diffraction of electrons by, A., 18.
scattering of light by, A., 565.
Doppler effect in light scattered by, A., 1053.
liquid, photo-oxidation of, A., 590.
effect of temperature on viscosity of, A., 438.
crystalline, molecular size of, A., 156.
convection currents in layers of, on mercury, A., 807.
fluorination of, (P.), B., 347.
toxicity of, A., 1533.
effect of ingestion of, on blood-sugar, A., 243.
poisoning by. See under Poisoning.
differentiation of chloroform and, A., 958.
detection of, in chloroform, B., 442.
tetrafluoride, structure of, A., 687.
ionisation curves of, due to polonium α -rays, A., 558.
tetraiodide, oxidation of, A., 454.
suboxide, structure of, A., 687.

Carbon suboxide, determination of, in presence of higher oxides and oxygen, A., 949.
monoxide, linkings in, A., 1193.
 molecular dissociation of, A., 1193.
 molecular dissociation energy of, A., 925.
 recovery of, from electro-distillation of phosphorus, B., 21.
 spectrum of, A., 1051.
 Zeeman effect and perturbation in, A., 679.
 band spectrum of, A., 9, 555, 1188, 1299.
 Stark effect in molecular spectrum of, A., 1291.
 atomic polarisation of, A., 148.
 ionisation of, by electron impact, A., 1305.
 formation of negative ions in, A., 140.
 predissociation in, A., 805.
 dissociation of, by electron impact, A., 46.
 dissociation energy of, A., 1462.
 A¹Π state of, A., 561.
 internal resonance in, A., 9.
 specific heat of, at high temperatures, A., 155.
 at high pressures and temperatures, A., 437.
 heat of dissociation of, A., 1299.
 liquid, viscosity of, A., 1064.
 adsorption of, by molybdenum and zinc oxides, A., 27.
 by reduced hæmatin and pyridine-hæmochromogen, A., 1517.
 equilibrium of, with vanadium tetroxide, A., 35.
 kinetics of combustion of, A., 1080.
 catalytic combustion of, A., 455.
 cathodic combustion of, A., 310.
 catalytic effect of hydrogen on flames of, A., 454, 588, 710.
 ionisation and radiation in explosions of oxygen and, A., 451.
 catalysis of decomposition of, by nickel, A., 1467.
 catalytic oxidation of, on manganese dioxide, A., 941, 942.
 oxidation of, by nitrous oxide, A., 307.
 photochemical oxidation of, A., 177.
 reduction of selenium dioxide by, A., 593.
 reduction of vanadium oxides by, A., 313.
 action of, on ammoniacal solutions of cupric salts, A., 1332.
 on fireclay, B., 496.
 with atomic hydrogen, A., 39.
 with hydrogen, catalysts for, (P.), B., 393.
 with molybdenum oxides, A., 44.
 catalysis of reaction of, with oxygen by platinum oxide, A., 175.
 acetals of, A., 959.
 absorption spectra of hæmochromogen compounds of, A., 999.
 synthesis of liquid fuels and lubricating oils from, B., 179.
 production of methane from, B., 390.
 removal of, from town gas, B., 884.
 storage of, B., 403.
 use of, in gold analysis, A., 1339.
 protection against, in industry, B., 784.
 anæsthetic properties of, towards centipedes, insects, and plants, A., 1160.
 poisoning by. See under Poisoning.
 effect of, on animal cells, shown by vital stains, A., 896.

Carbon monoxide, detection of, in corpses, A., 398.
 alarm for, B., 1070.
 detection and determination of, B., 60.
 determination of, in small quantities, A., 718.
 apparatus for, B., 493.
 with cuprous chloride solutions, B., 590.
 by Nicloux's method, A., 53.
 in air, B., 526, 880.
 determination in, of impurities, B., 146.
 dioxide, formation of, and hydrogen peroxide, from mixtures of oxygen, hydrogen, and carbon monoxide, A., 310.
 production of, by absorption process, B., 21.
 from limestone, etc., (P.), B., 452.
 recovery of, from air and flue gases, (P.), B., 992.
 deodorisation of, (P.), B., 100.
 refractive index in relation to density of, A., 14.
 intensity distribution in Rayleigh lines of, A., 1190.
 new bands in infra-red spectrum of, A., 1444.
 Stark effect in molecular spectrum of, A., 675.
 Raman spectrum of, A., 145.
 rotational Raman effect in, A., 281.
 formation of negative ions in, A., 140.
 absorption and reflexion coefficients of ultrasonic waves in, A., 20.
 thermal conductivity of, near critical point, A., 574.
 thermal conductivity and accommodation coefficient of, A., 691.
 heat capacity of, A., 21.
 effect of pressure and foreign gases on relaxation time of vibrational heat in, A., 289.
 solidification of, (P.), B., 452.
 solid, production of, (P.), B., 227, 306, 452, 992, 1092.
 apparatus for, (P.), B., 258, 544.
 presses for, (P.), B., 948.
 production and uses of, B., 403.
 transport and use of, (P.), B., 148.
 absorption of, by potassium carbonate solutions, A., 41.
 rate of, A., 938.
 by caustic alkalis, A., 41.
 coefficients of, by water in towers, B., 1091.
 density of, adsorbed on charcoal, A., 1457.
 velocity of sound in, A., 155.
 solubility of, in salt solutions, B., 258.
 catalytic effect of soda in reduction of, by charcoal, A., 44.
 reactivity of anthracite with, B., 211.
 action of, on calcium hydroxide solutions, A., 1088.
 on magnesium, A., 312.
 preparation of carbamide from ammonia and, A., 966, 1357.
 production of methane from, B., 390.
 preservation of tinned foods, etc., with, (P.), B., 782.
 removal of, from gases, (P.), B., 793.
 in air, effect of wind on, A., 724.
 carbon balance in manurial trials with, B., 689.
 storage of, in plants, A., 1177.
 assimilation of, by animal cells, A., 112.
 respiratory exchange of, and oxygen during re-breathing, A., 1391.

Carbon dioxide, effect of high tension of, on urine formation and glomerular blood-flow, A., 1148.
 determination of, A., 422.
 apparatus for, A., 839, 952.
 by electrical conductivity, A., 718.
 with perchloric acid, A., 185.
 by thermal conductivity, A., 185.
 in air, B., 288, 335, 671.
 apparatus for, A., 466.
 photocolorimetrically, B., 976.
 potentiometrically, B., 926.
 in assimilation, A., 549.
 in carbonates and in baking powder, B., 947.
 in culture solutions, A., 1044.
 carbamino-bound, determination of, in hæmoglobin solution, A., 102.
Carbonic acid, dissociation constant of, A., 301, 823.
 first dissociation constant of, A., 1321.
 second dissociation constant of, A., 1203.
 thermodynamic ionisation constants of, from e.m.f. measurements, A., 1321.
 thermal conductivity of, A., 1455.
 reduction of, by nascent hydrogen, A., 833.
 esters, pyrolysis of, A., 1223.
 derivatives of, A., 471.
Carbonates, hydrothermal synthesis of, A., 49.
 discharge potential of, A., 45.
 study of melts of, with oxygen electrodes, A., 1462.
 influence of added oxides on decomposition of, A., 942.
 free carbon dioxide in solutions of, A., 34.
 in veins of rocks, A., 1346.
 acid, discharge potential of, A., 45.
 mineral, lattice data for, A., 1194.
 determination in, of carbon dioxide, A., 185; B., 947.
 Bicarbonate ions, activity coefficients of, A., 1321.
 Percarbonates, A., 1332.
Carbon selenide, emission spectrum of, A., 805.
 disulphide, production of, and hydrogen sulphide, (P.), B., 948.
 recovery of, in manufacture of viscose silk, (P.), B., 301.
 absorption spectrum of, A., 913.
 Raman spectrum of, A., 145, 1190.
 Faraday effect for, A., 283.
 ionisation of, by γ-rays, A., 677.
 by X-rays, A., 148.
 gaseous, Raman spectrum of, A., 564.
 adsorption of, by alumina gels, A., 160.
 surface tension of, at low temperatures, A., 15.
 effect of light on solution of amorphous selenium in, A., 1331.
 effect of gases on explosibility of air mixtures of, A., 827.
 explosions of mixtures of, with nitric oxide, A., 1081.
 decomposition of, by electrodeless discharge, A., 46.
 oxidation of, by Kjeldahl's method, A., 588.
 action of, on sodium cellulose, A., 1486.
 manufacture of corrosion inhibitors and vulcanisation accelerators from, (P.), B., 840.
 removal of, from benzol by "methanol-soda process," B., 791.
 from gases, (P.), B., 891, 1126.
 from hydrocarbons, (P.), B., 89.

Carbon disulphide, sub-surface treatment of soils with, for nematode control, B., 965.
determination of, in air, B., 47.
in air of viscose silk factories, B., 1087.

Carbon detection and determination:—
detection of hydrogen, mercury, and, in organic compounds, A., 876.
determination of, volumetrically, barometer corrections in, A., 506.
in biological material, A., 674, 1393.
in iron, with electric tube furnace, B., 29.
in iron alloys, B., 272.
in lungs, A., 1396.
in organic compounds, by chromic acid method, A., 639.
microchemically, A., 1140.
by Pregl's method, A., 369.
by Robinson's sulphur dioxide method, A., 1258.
by semi-micro-method, A., 101, 639.
by wet method, A., 369, 638.
in rocks and minerals, A., 53.
in sea-water, A., 949.
in soils, B., 470, 965, 1108.
with chromic acid, B., 1157.
by wet-combustion, B., 917.
in tar, colorimetrically, B., 341.

Carbon black, B., 483, 534.
manufacture of, (P.), B., 180, 294, 661, 982, 1033, 1082.
from hydrocarbons, (P.), B., 9.
from sunflower seed husks, B., 861.
manufacture and uses of, B., 932.
effect of barium sulphate on drying time, gloss, and oil absorption of, B., 561.
granules of, (P.), B., 711.
surface chemistry of, B., 685.
production of pigments from, (P.), B., 914.

Carbon electrodes, manufacture and properties of, B., 158.

Carbon-halogen linkings, variation of distances of, A., 569.

Carbonaceous materials, heating of, (P.), B., 615.
preheating of, (P.), B., 213.
heat treatment of, (P.), B., 890, 935.
apparatus for, (P.), B., 342, 661.
carbonisation of, (P.), B., 87.
vertical retorts for, (P.), B., 439.
cracking and distillation of, (P.), B., 792.
distillation of, (P.), B., 935, 982, 1033.
apparatus for, (P.), B., 837, 890.
vertical retorts for, (P.), B., 1125.
hydrogenation of, (P.), B., 393, 1033.
catalytic hydrogenation of, (P.), B., 55.
catalytic destructive hydrogenation of, (P.), B., 1082.
destructive hydrogenation of, (P.), B., 9, 88, 134, 180, 213, 295, 439, 661, 837, 891, 1125.
solid, apparatus for coking of, (P.), B., 792.
distillation of, (P.), B., 439.
destructive distillation of, (P.), B., 342.
distillation of mixtures of oils and, (P.), B., 294.
catalytic destructive hydrogenation of, (P.), B., 935.
destructive hydrogenation of, (P.), B., 393, 583.
production of liquid hydrocarbons from, (P.), B., 712.
manufacture of fertilisers from, (P.), B., 248.
production of hydrocarbons from, (P.), B., 260, 891.
removal of, from vessels, (P.), B., 663.

Carbonates. See under Carbon.

Carbonic acid. See under Carbon.

Carbonisation, (P.), B., 8.
apparatus for, (P.), B., 213, 294, 661.
plant for, B., 339; (P.), B., 711.
retorts for, (P.), B., 87.
retort furnaces for, (P.), B., 582.
of solid materials, (P.), B., 757.
low-temperature, apparatus for, (P.), B., 485.
'chemical engineering in plant for, B., 978.
external and internal heating in, B., 755.
retort ovens for, (P.), B., 8.
heating oven walls for, (P.), B., 439.

Carbonitrosohydrazines, A., 855.

Carbonyl chloride (*phosgene*), photochemical formation of, A., 457, 1211.
adsorption of, by active charcoal, A., 160.
condensation of, with ethylene, A., 845.
determination of, iodometrically, A., 53.
compounds, condensation of, by means of alkali metals, A., 729.
cleavage of, A., 1240.
action of calcium hypochlorite on, A., 958.
substituted, Raman spectra of, A., 146.
determination of, with 2,4-dinitrophenylhydrazine, A., 101, 998.
fluoride, A., 180.
group, absorption spectra of, in aldehydes and ketones, A., 10.
thermochemistry of, A., 811.
determination of, microchemically, A., 228.
volumetrically, A., 1390.
sulphide, structure of, A., 687.
infra-red absorption spectra of, A., 1300.
velocity of reaction of, with water, A., 1207.

Carbonyltetraphenyldihydrophthalic anhydride, A., 213.

o-Carboxyphenoxyphenyl cholesterylcarbonate, A., 745.

Carborundum (*silicon carbide*), formation and dissociation of, B., 1094.
unipolar conductivity of, A., 809.
determination of resistance of, A., 683.
contact phenomena in resistances of, A., 1191.
abrasive paper from, (P.), B., 805.
manufacture of refractories of, (P.), B., 61.

Carboxaldehydicarbamide, A., 360.

o-Carboxyacetophenone 2'-bromo-4'-nitrophenylhydrazone, A., 1253.

6-Carboxy-2'-alkoxydiphenyls, 2-nitro-, racemisation of, A., 1364.

4-Carboxy-2-arsinophenylglycine, A., 637.

o-Carboxybenzamidoo- Δ^{β} -butenylmalonic acid, and its sodium salt, A., 1228.

α -p-Carboxybenzenesulphonyl- α -benzenesulphonylthane, and its methyl ester, A., 340.

α -p-Carboxybenzenesulphonyl- α -phenylthioethanes, and their derivatives, A., 340.

α -p-Carboxybenzenesulphonyl- α -p-toluenesulphonyl- α -phenylthioethanes, and their derivatives, A., 340.

7-o-Carboxybenzoylquinoline, 8-hydroxy-, and its salts and derivatives, A., 500.

α -m- and p-Carboxybenzyl-n-hexoic acids, and their silver salts, A., 488.

c-Carboxybenzyloxy- α -carboxy-l-lysine anhydride, A., 1416.

o-(β -Carboxy- Δ^{β} -butenylamido)benzamide, and its derivatives, A., 1387.

5-Carboxy-4-carbethoxy-3':5'-dimethyl-3:4'-diethylpyrromethene hydrobromide, A., 1134.

2-Carboxy-5-carbethoxy-4-methylpyrrole-3-fumaric acid, methyl esters, A., 993.

4-Carboxy-3:3'-dimethyl-4'- β -carboxyethylpyrromethene hydrobromide, A., 633.

5'-Carboxy-4:4'-dimethyl-3:3'-di-(β -carboxymethoxyethyl)pyrromethene, 5-hydroxy-, and its methyl ether methyl ester, A., 363.

5-Carboxy-2:4-dimethyl-3- α -dicarboxyethylpyrrole, A., 363.

5-Carboxy-3':5'-dimethyl-3:4'-diethylpyrromethene, 4-bromo-, hydrobromide, A., 1134.

5'-Carboxy-4:4'-dimethyl-3:3'-diethylpyrromethene, 5-hydroxy-, A., 364.

γ -4-Carboxydimethylphthalide-3-n-butyric acid, and its derivatives, A., 1496.

β -4-Carboxydimethylphthalide-3-propionic acid, and its silver salt, A., 1496.

5-Carboxy-2:4-dimethylpyrrole-3-fumaric acid, and its trimethyl ester, A., 993.

5-Carboxy-2:4-dimethylpyrrole-3-maleic anil, A., 994.

2-Carboxydiphenyl, 5-amino-, and 5-nitro-, production of, (P.), B., 877.

2'-Carboxydiphenyl-2-acetic acid, A., 1361.

2-Carboxydiphenylene oxide, 3-hydroxy-, manufacture of, (P.), B., 585.

2'-Carboxydiphenylsulphone, 2-amino-, acetyl derivative, A., 1490.

o- β -Carboxyethylphenylarsinic acid, o-a-bromo, A., 1515.

Carboxyhaemoglobin, crystallisation of, from blood of various species, A., 640.

1-Carboxy-2-cyclohexylphenylacetic acid, 2-hydroxy-, lactone, A., 1496.

Carboxyl groups, influence of, on allylic intramolecular transpositions, A., 63.

Carboxylase, stabilisation of solutions of, A., 401, 897.
inactivation of, by diazomethane, A., 897.

Carboxyliguanin, iodo-, A., 214.

5'-Carboxy-5-methoxy-4:4'-dimethyl-3:3'-di-(β -carboxyethyl)pyrromethene, and its esters, A., 363.

5-Carboxy-5'-methoxy-4:4'-dimethyl-3:3'-diethylpyrromethene, methyl ester, A., 364.

6-Carboxy-2'-methoxydiphenyls, 2-nitro-, racemisation of, A., 1364.

Carboxymethylbenzimidazole-5-arsinic acid, A., 502.

7-Carboxy-2-methyldiphenylene oxide, A., 757.

cis-endo-cis-3:6-endoCarboxymethylenehexahydrophthalic acid, 4:5-dihydroxy-, 1:5-lactone, A., 212.

Carboxy-N-methylenesulphoxylic acids, sodium salts, tetrahydrates, A., 100.

2-Carboxy-3-methyl-4-ethylpyrrole-5-carboxylic acid, ethyl ester, A., 632.

Carboxy-1-methylindoleacetic acids, A., 222.

1-Carboxy-1-methylcyclopentane-2-acetic acid, A., 1239.

o-Carboxymethylphenol- β -D-glucoside, sodium salt, A., 964.

p-Carboxymethylphenol- β -D-glucoside, and its sodium salt and methyl ester, A., 964.

Carboxymethylphenylacetic acids, hydroxy-, A., 748.

l- γ -Carboxymethyltetronic acid, and l-a-bromo-, A., 662.

4-Carboxy-2-nitrophenyl 3-methanesulphonyl-p-tolyl and p-tolyl ethers, A., 1491.

2-(2'-Carboxycyclopentyl)-3:4-dihydronaphthalenes, 1-hydroxy-, lactones of, A., 1497.

- α -(*trans*-2-Carboxycyclopentyl)- γ -phenylbutyric acid, and its anhydride, and α -cyano-, A., 1496.
 2-Carboxy-1-cyclopentylsuccinic acid, and its ethyl ester, A., 748.
 2-(2'-*trans*-Carboxycyclopentyl)-1:2:3:4-tetrahydronaphthalene, A., 1497.
 2-Carboxyphenyl β -hydroxyethyl sulphide and sulphoxide, A., 1490.
 6-Carboxyphenylacetic acid, 2:3:4-trihydroxy-, and its ethyl ester, and acetyl derivative, A., 620.
 4-Carboxyphenylarsinic acid, 3-amino-, formation of, from 3-nitro-4-methylphenylarsinic acid, and its reaction with hydrobromic acid, A., 768.
 5-Carboxyphenylarsinic acid, 2-chloro-, A., 637.
p-Carboxyphenyl-*p*-benzoquinone, A., 86.
 α -Carboxy- γ -phenyl- β -benzylbutyric acid, and α -amino-, and α -bromo-, A., 747.
 α -Carboxy- δ -phenyl- β -benzylvaleric acid, α -amino-, and α -bromo-, A., 746.
 α -Carboxyphenylcarbamie acid, cholesteryl and ethyl esters, A., 209.
 α -Carboxyphenyl-*N*-*p*-chlorophenylurethane, A., 998.
 6-Carboxyphenylene-1:5-bisacetic acid, 2:3:4-trihydroxy-, and its acetyl derivatives, A., 620.
 α -Carboxy- γ -phenyl- β -ethylbutyric acid, and α -amino-, and α -bromo-, A., 746.
p-Carboxyphenylethyl-*n*-propylarsine oxide hydrochloride and sulphide, A., 875.
 4(5)-*p*-Carboxyphenylglyoxaline, and its salts, A., 1507.
 α -Carboxyphenyl- α :8:8'-*di*hydroxydiquinolymethane, and its derivatives, A., 500.
 2-Carboxyphenyl- β -hydroxyethylsulphone, A., 1490.
 4-(3'-Carboxyphenyl)-2:3-indeno-(3':2')-chromylum chloride, 7-hydroxy-4(4'-hydroxy)-, A., 1130.
 Carboxyphenylmaleamic acids, A., 491.
 α -Carboxy- γ -phenyl- β -methylbutyric acid, and α -amino-, and α -bromo-, A., 746.
p-Carboxyphenylmethyl-*n*-propylarsonium iodide, A., 875.
 α -Carboxy- δ -phenyl- β -methylvaleric acid, and α -amino-, and α -bromo-, A., 746.
 2-*p*-Carboxyphenyl-1:4-naphthaquinone, A., 87.
 8- α -Carboxyphenyl-1-naphthoic acid, and its methyl esters, A., 859.
 γ - α -Carboxyphenylpropylpyridinium chloride and picrate, A., 987.
p-Carboxyphenylquinol, A., 87.
 Carboxypolypeptidase, crystalline, A., 897.
 α -Carboxy- γ -styryl- β -benzylbutyric acid, A., 746.
 α -Carboxy-2:4:6:4'-tetramethoxystilbene, and its methyl ester, A., 220.
 3-Carboxy- γ - α -tolyl-*n*-butyric acid, and its ethyl ester, A., 1236.
 2-Carboxy-*p*-tolyl-*N*-*p*-chlorophenylurethane, A., 998.
 5-Carboxy-4:4':5'-trimethyl-3'-ethyl-3-bromovinylpyrromethene hydrobromide, A., 871.
 Carbylamines, A., 485.
 aromatic, reaction of, with naphthols, A., 485.
 Carcino-sarcoma, Walker growing, effect of, on blood and tissue enzymes, A., 1008.
 Carcinoma. See Cancer.
 Cardboard, impregnation of counters of, B., 798.
 varnished, manufacture of gramophone discs of, (P.), B., 988.
 Cardboard, waterproof, manufacture of, (P.), B., 223, 990.
 "Cardiazol," pharmacology of, A., 525.
 Cardio-renal affections, retention of glyoxalines in, A., 107.
 Cardiotonics, action of, on frog hearts, A., 1158.
 Carlic acid, molecular constitution of, A., 662.
 Carlina oxide, constitution and synthesis of, A., 1128.
 Carlosic acid, molecular constitution of, A., 662.
 Carminic acid, synthesis of compounds related to, A., 748.
 Carnallite, hydrochloric acid and magnesium oxide as by-products from, B., 354.
 Solikamsk, bromine in decomposition products of, B., 60.
 Carnitine, content of, in muscle, A., 1003.
 Carnosine, synthesis of, A., 628.
 electro dialysis of aqueous solutions of, A., 370.
 flavianate, A., 639.
 in mammalian skeletal muscle, A., 882.
 Carnotite, roasting of, (P.), B., 236.
 Carolic acid, constitution of, and its derivatives, A., 327.
 Carolinic acid, and its derivatives, A., 327.
 Carotene, structure of cholesterol and, A., 1493.
 isolation of, from plants, (P.), B., 478.
 recovery of, (P.), B., 1166.
 from green leaves, (P.), B., 174.
 pigment materials from, (P.), B., 914.
 crystalline, non-production of, hypervitaminosis-A by, A., 668.
 colloidal, effect of local applications of, A., 903.
 action of, with chloral hydrate and with trichloroacetic acid, A., 1551.
 in feeding-stuffs and vegetables, B., 1061.
 effect of feeding with, A., 1545.
 assimilation of, in presence of mineral oil, A., 261.
 action of colloidal solutions of, on eyes, A., 415.
 in blood and in adrenals, effect of thyroxine or thyrotropic hormone on, A., 790.
 in ovarian tumours, A., 1400.
 absorption of, by choledochocolonostomised rats, A., 1427.
 utilisation of, by jaundiced and phosphorus-treated vitamin-A-deficient rats, A., 1427.
 and vitamin-A, A., 261.
 distinction of, from oils containing vitamin-A, A., 1428.
 from vitamin-A, A., 1428.
 determination of, colorimetrically, A., 1487.
 in plants, A., 1434.
 in blood-serum, A., 1427.
 in human milk and serum, A., 1427.
 in serum, A., 103.
 β -Carotene, degradation and constitution of, A., 611.
 from fungi, A., 406.
 analysis of, mixed with leaf xanthophyll, A., 551.
 Carotenes, A., 1434.
 in leaves, A., 1434.
 from roots and leaves, A., 422.
 oxidation of, A., 340.
 α - and β -Carotenes, absorption spectra of, A., 1189.
 Carotenoids, A., 1040.
 formation of chain of, by condensation of β -methyl- Δ^a -butenal, A., 1353.
 absorption spectra of, A., 1052.
 Carotenoids, purification and absorption spectra of, A., 738.
 viscosity of, A., 611.
 absorption of, in the animal body, A., 1264.
 of acid-fast bacteria, A., 663.
 in fish, A., 1161.
 of fungi, A., 254.
 of insects, A., 105.
 in marine animals, A., 1145.
 development of, in etiolated plants, A., 263.
 determination of, A., 551.
 in wheat, B., 425.
 β -Carotene aldehyde, and its oximes, A., 611.
 Carp, variations in fat and water content of, A., 390.
 tolerance of, to tribromoethyl alcohol, A., 656.
 influencing of sex of, by hormones, A., 1545.
 Carpets, cleansing agents for, (P.), B., 98.
 Carrolite, A., 727.
 Carrots, effect of *Rhizoctonia solani* on growth of, A., 898.
 blue fluorescent substance from, A., 1180.
 control of rust fly on, B., 1012.
 varieties of, as source of vitamin-A, A., 543.
 vitamin-C in, B., 171.
 effect of, in diet on rat serum-proteins, A., 242.
 Carrot juice, carotene from, A., 422.
 Cartilage, constituents of, A., 1144.
 glycogen and lactic acid in, A., 1264.
 bird's, calcification in, A., 393.
 determination in, of ehondroitinsulphuric acid, A., 111.
 Cartridges, liquid air or oxygen explosives for, B., 479.
 blasting, (P.), B., 479, 526, 784, 926.
 Carbox, heating mixture for, B., 751.
 Carvacrol, A., 1232, 1369.
 synthesis of, A., 744.
 dipole moment of, A., 684.
 3-mercurichloride, A., 1139.
 bactericidal properties of, A., 900.
 Carvacrol, chloro-, stabilisation of derivatives of, (P.), B., 396.
 Carvacrylaldehyde, and its semicarbazone, A., 1239.
 Carvomenthols, and their derivatives, A., 1245.
 Carvomenthone, rotatory dispersion of, A., 809.
 oxidation of, by selenium dioxide, A., 624.
l-isoCarvomenthone, and its derivatives, A., 1245.
l-isoCarvomenthylamine, A., 1245.
 Carvone, bioconversion of limonene to, A., 351.
 hydrosulphide, absorption spectrum and constitution of, A., 1300.
m-nitrobenzhydrazide, A., 743.
 Carvone series, A., 1245.
 Carvotanacetol, synthesis of, A., 624.
 Caryophyllene, constitution of, A., 866, 976.
 additive product of, with malic anhydride, and its derivatives, A., 351.
 Caryophyllenes, A., 90, 756.
 Caryophyllene series, A., 1375.
 Caryophyllenic acid, and its derivatives, and *mono*- and *di*-bromo-, and hydroxy-, dimethyl ester, A., 351.
cis-Caryophyllenic acid, A., 90.
 Cascarilla, Brazilian plants similar to, B., 877.

- Casein, A., 638.
production of, (P.), B., 781.
from cream and milk, (P.), B., 122.
from milk, (P.), B., 380.
from soya beans and peanuts, B., 875.
heterogeneity of, A., 1523.
colloidal and constitutive changes of, A., 823.
combination of, with bromine, A., 506.
with tyrosine, A., 506.
precipitation of, in presence of serum-albumin, A., 101.
manufacture of ester-like conversion products of, (P.), B., 93.
manufacture of transparent shoots and coatings from, (P.), B., 1041.
glueing with mixtures of albumin and, B., 592.
leather finishes from, B., 914.
moulded products of, (P.), B., 915.
use of, in synthetic plastics and resins, B., 1151.
effect of heat and alcohol extraction on nutritive value of, A., 1404.
utilisation of, by rats, A., 1272.
lactic, B., 571.
saponified, (P.), B., 365.
determination of, in buttermilk porridge, B., 971.
in milk, B., 377.
determination in, of fat, B., 1161.
- Caseinogen, rotation and dissociation of, A., 506.
alcoholic hydrolysis of, A., 998.
action of pancreatin on, A., 252.
action of pepsin-hydrochloric acid on, and its degradation products, A., 1279.
compounds of, with nucleic acid, A., 375.
effect of avitaminosis-B on enzymic digestion of, A., 415.
gaseous exchange and heat production in ingestion of, by albino rats, A., 388.
heated, effect of, on growth of rats, A., 388.
- Caseinogenates, behaviour of sols of, A., 1267.
- Cashew apple. See *Anacardium occidentale*.
- Cashew nuts, production of germicide from shells of, (P.), B., 128.
- Cassia absus*, oil from, A., 1435.
- Cassia auriculata*, determination in, of tannin, A., 673.
- Castings, soundness of, B., 358.
of metals, etc., (P.), B., 772.
alloy, X-ray study of, B., 153.
non-ferrous alloy, treatment of, (P.), B., 956.
detection of light-metal alloys used in, B., 905.
- Castor beans, lipase of, A., 1025, 1416.
- Castor oil, dehydration of, with Japanese acid earth as catalyst, B., 559.
critical solution temperature of, in alcohol, B., 597.
spontaneous emulsification of, in water, A., 1316.
pyrolysis of, A., 845.
reaction of, with concentrated sulphuric acid, B., 641.
softener for nitrocellulose compositions from, (P.), B., 159.
- Castration, effect of, on blood-pressure in rabbits, A., 1401.
effect of, on metabolism, A., 128.
action of pituitary extracts in, A., 541.
- Cats, substance liberated from nictating membrane of, by sympathetic stimulation, A., 116.
- Catabolism, nitrogen, in invertebrates, A., 1015.
- Catalase, constitution of, A., 1278.
proportionality studies on, A., 248.
spectroscopy of, A., 1535.
potentiometry of action of, A., 1161.
inhibition of action of, A., 1415.
inhibitors of reaction of, A., 248.
surface inactivation of, A., 896.
effect of thyroid on, A., 1536.
from marine plants, inactivation of, by oxygen, A., 532.
and oxidation in animal tissues, A., 400.
in blood, effect of ascorbic acid on, A., 1535.
in red blood-corpuscles, A., 658.
in embryos, A., 519, 1535.
in embryonic development, A., 1415.
liver, spectroscopy of action of, on ethyl hydrogen peroxide, A., 1189.
reversible hydrolysis of, A., 1278.
- Catalysis, A., 191.
history of, A., 953.
theories of, A., 454.
apparatus for, (P.), B., 833.
demonstration of, A., 1329.
influence of temperature on, A., 309.
energetics of, A., 589, 1210.
and adsorption, A., 160, 940.
application of, in microanalysis, A., 711, 1084.
acid, in non-aqueous solvents, A., 1209.
contact, A., 43.
enzymic, specificity of, A., 940.
heterogeneous, A., 696, 940, 1209.
influence of solvent on, A., 455.
kinetics of, A., 1084.
and chemical inertia, A., 587.
successive reactions in, A., 963.
role of adsorbed atoms in, A., 940.
function of carriers in, A., 1086.
in gas reactions, A., 711, 1209.
in solution, effect of electric waves on, A., 455.
heterogeneous-homogeneous, A., 1085.
homogeneous, quantum mechanics of, A., 43, 533.
- Catalysts, production of, (P.), B., 673.
combined action of radiation and, A., 47.
velocity of reaction and quantity of, A., 830.
new promoter for, A., 830.
ageing of thin layers of, A., 940.
poisoning of, A., 711.
adsorption, mechanism of, A., 940.
chromic oxide-zinc oxide, heat of adsorption of gases on, A., 1457.
chromium, influence of composition and packing of contact mass on activity of, B., 403.
activation of, by barium oxide, A., 1209.
poisoning of, A., 1209.
chromium-tin, effect of metallic oxides on activity of, A., 1209.
copper, pyrophoric properties of, A., 175.
gauze, manufacture of, (P.), B., 66.
of decomposition of hydrogen peroxide, influence of sorbed gas on activity of, A., 1209.
hydrogenation, B., 403; (P.), B., 270.
destructive hydrogenation, A., 940.
iron, for synthetic ammonia, adsorption of hydrogen by, A., 1315.
determination of surface area of, A., 1329.
metallic, production of, electrolytically, (P.), B., 506.
exchange reactions of hydrogen on, A., 44.
- Catalysts, mixed, X-ray study of structure of, A., 455.
molybdenum spent, recovery of, (P.), B., 270.
molybdenum-zinc, poisoning of, A., 1085.
nickel, activity of, B., 802.
nickel-copper, activity of, A., 711.
optically active, optical selectivity in reactions with, A., 972.
oxide, properties of, A., 1467.
shaped, manufacture of, by pressing, (P.), B., 803.
vanadium, for oxidation of sulphur dioxide, B., 268.
vanadium pentoxide, influence of carrier on, B., 146.
vanadium-barium, inactivation of, B., 723.
zinc oxide-chromic oxide and cupric oxide-chromic oxide, A., 175.
- Catalytic activity, and ferromagnetic transformation, A., 153.
and thermionic emission, A., 273.
of inorganic halides, A., 454.
of solids in transition states, A., 1086.
combustion. See under Combustion.
hydrogenation, mechanism of, A., 940.
application of high-tension electric discharge in, B., 559.
temperature coefficient of, A., 1210.
by means of selenium, A., 829.
carboids formed in, B., 6.
molecular compounds in, A., 1362.
of carbonaceous materials, (P.), B., 55.
of unsaturated compounds, A., 175.
destructive, catalysts for, A., 940; B., 790.
oxidation, A., 1246.
by colloids, A., 830.
of organic vapours, A., 43.
reactions, apparatus for, (P.), B., 385, 753, 754, 1073.
temperature control of, (P.), B., 1073.
exothermic, carrying-out of, (P.), B., 385, 609.
gaseous exothermic heterogeneous, A., 839.
organic, classification of, A., 1348.
reduction, A., 1120.
surfaces, variable activity of, A., 940.
- Cataphoresis, theory of electro-osmosis and, A., 162.
measurement of, with resistance lamps, A., 320.
apparatus for, A., 188, 1024.
relation of, to particle size, A., 1321.
of particles in water, A., 698.
micro-, A., 579.
- Cataract, composition of crystalline lens in, A., 1008.
treatment of, with ascorbic acid, A., 1401.
chemistry of, in diabetes, A., 1269.
in rats on high-lactose rations, A., 649.
fed on vitamin-B₂-deficient diet, A., 1175.
- Catatonina from adrenalin and mescaline derivatives, A., 119.
- d-Catechin, transformation of, into cyanidin chloride, A., 757.
- Catechins, transformations of, A., 867.
- Catechol. See Pyrocatechol.
- Caterpillars, toxicity of sodium fluoride and silicofluoride to, B., 423.
asparagus. See under Asparagus.
tomato moth, control of, by spraying, B., 741.
- Cathepsin, activation of, A., 252, 785.
in embryo and in maternal tissues, A., 1537.
concentration of, in organs, A., 1537.
in tissues, A., 1537.

- Cathepsin**, liver-, effect of arsenic compounds on activity of, A., 1538.
determination of, nephelometrically, A., 123.
- Cathetometers**, micro-, liquid-type, A., 467.
- Cathodes**, (P.), B., 462.
current distribution at, A., 306.
omission potential of, A., 1311.
sputtering of, A., 572.
disintegration of, (P.), B., 1100.
alkali-metal, photo-electric effect of surface layers on, A., 808.
caesium oxide, photo-electric effect of, A., 808.
electron-emission, production of, (P.), B., 1053.
glow, (P.), B., 639.
electron grouping at hollows in, A., 1439.
incandescence, (P.), B., 108, 1001.
mercury, polarisation curve of, A., 1079.
polarisation and constitution of conducting layer at, A., 1079.
mercury dropping, polarographic studies with, A., 37, 305, 376, 456, 706, 936, 1079, 1205, 1208, 1462.
depolarisation potentials in electrolysis with, A., 1325.
intensity of diffusion current in relation to renewal of surface of, A., 937.
mercury moving, A., 952.
nickel, production of, (P.), B., 506.
oxide-coated, composition of, A., 1449.
equilibrium emission and activity changes in, A., 425.
photo-electric, spectral sensitivity of, A., 429.
composite, spectral photo-electric sensitivity of, A., 1191.
thermionic, (P.), B., 911.
manufacture of, (P.), B., 507.
alloys for, (P.), B., 66.
- Cattle**, bone meal as mineral supplement for, B., 699.
cane molasses as feeding-stuff for, B., 476.
feeding of, with chemically-treated straw, B., 971.
with weeping-willow leaves, B., 428.
fertilisation of pastures for grazing of, B., 73.
influence of mineral-acid silage on acid-base equilibrium in, B., 572.
digestive enzymes in, A., 533.
mineral requirements of, A., 114.
effect of decomposed protein in silage in nitrogen metabolism of, B., 699.
"limonites" used in curing bush sickness in, B., 168.
fluorosis in, B., 168.
haematology of, A., 1391.
reputed poisoning of, by sewage, B., 1168.
alpine, growth curves of, B., 327.
dairy, use of starchy foods for, B., 476.
- Caulking compositions**, (P.), B., 775.
- Ceanothus velutinus***, constituents of, A., 267.
- "Cebion." See Vitamin-C.
- Cedar-wood oil**, Atlas, B., 45.
- Cedraia***, Brazilian, oils from, B., 381.
- Cedrene**, A., 983.
constitution of, A., 1376, 1503.
Raman effect of, A., 1054.
- isocedrenedicarboxylic acid***, and its methyl ester and its derivatives, A., 984.
- Cedrene glycol**, derivatives of, A., 984.
- Cedrol**, A., 983.
- Cedron**, structure of, A., 80.
- Celadonite** from Koktebel, Crimea, A., 954.
- Celery**, effect of soil pH on rate of growth of, B., 117.
- Celery**, chlorosis of, B., 516.
control of tarnished plant bug in, B., 919.
self-blanching, unsaturated compounds in, A., 1289.
- Celestine**, infra-red spectrum of, A., 145.
- Celestite** from Chittenango Fall, New York, 726.
- Celotex**, manufacture of, from bagasse, B., 666.
physical properties of, B., 221.
tensile strength, bending strength, and hardness of, B., 540.
- Cell or Cells**, electrochemical, (P.), B., 958, 1100.
active material for, (P.), B., 682.
asymmetric conductivity of, A., 682.
Volta effect in, A., 1462.
Japanese ammonium chloride for, B., 681.
carbon electrodes for, (P.), B., 812.
single electrode potentials and potential of, A., 169.
caustic electrolyte for, (P.), B., 639.
preventing creepage of electrolyte in, (P.), B., 462.
polarisation of, by alternating current, A., 449.
zinc sheets for, (P.), B., 414.
air-depolarisation, physical chemistry of, B., 29.
cadmium, potential of, A., 826.
caustic soda, high-ampere, B., 1000.
concentration, diffusion in, A., 584.
use of, in analysis, A., 1336.
dry, (P.), B., 30, 1002.
life of, B., 681.
service capacity of, B., 1052.
with magnesium chloride electrolyte, potential of, B., 461.
manganese dioxide for, B., 507.
fuel, B., 316.
at high temperatures, A., 1325.
Hall, non-graphitic linings for, B., 1052.
Haring, detection of electrode reactions with, A., 457.
high-resistance, measurement of potential of, A., 1097.
ideal, Faraday's law in, A., 1204.
with insulating layer, asymmetric conductivity of, A., 682.
Leclanché, current-producing reaction of, B., 957.
micro-quinhydrone-silver chloride, for use with heavy water, A., 1218.
moving boundary, potential of, A., 826.
standard, life of, A., 188.
temperature control box for, A., 188.
- Cell or Cells**, photo-electric, (P.), B., 30, 193, 415, 507, 731.
production of, (P.), B., 1053.
standardisation of, for measurement of visible light, A., 1475.
absolute calibration of, A., 1475.
manufacture of electrodes for, (P.), B., 639.
amplification of currents from, A., 1217.
discontinuities in voltage-current characteristics of, A., 465.
temperature measurement of, A., 1474.
irreversible layer and, A., 172.
measurement of quantity of light by, A., 1217.
for study of phosphorescence, A., 952.
measurement of concentration of dispersions, etc., with, (P.), B., 596.
study of substitution and decomposition by means of, A., 563.
use of, in chemical industry, B., 414.
in chemistry, B., 558.
with artificial insulating layer, A., 1191.
barrier-layer, A., 147, 188; B., 461.
- Cell or Cells**, photo-electric, caesium, B., 681.
sensitised by sulphur, A., 722.
combined with microscope, A., 422.
of semi-conductors, radiation from, A., 147.
cuprous oxide, A., 282.
containing dye solutions, action of gases on, A., 682.
gas-filled, working of counter tubes and, A., 282.
containing Grignard reagents, influence of depolarisers in, A., 706.
Kerr, A., 320.
rectifier, A., 58.
selenium, manufacture of, (P.), B., 911.
mechanism of action of light on, A., 178.
measurement of intense illuminations with, A., 188.
selenium-sulphur, A., 839.
thallium, A., 722.
photosensitive layers of, A., 1447.
spectroscopy with, A., 722.
- Cell or Cells**, physiological, structure of, by freezing-drying, A., 375.
localisation of nucleic acids in nuclei of, A., 1266.
use of sodium oxalate for heparin in determination of packed volume of, A., 1391.
action of hormones on growth of, A., 668.
glycolysis in growth and metabolism of, A., 777.
multiplication of, A., 242.
rearrangement of, in embryonic stages, A., 1414.
inhibition of division of, by X-rays, A., 1276.
constituents of, A., 1003.
carbonic acid assimilation by, A., 112.
permeability of, to oxygen, A., 238.
theory of diffusion in models of, A., 1023.
stimulation of, by foreign substances, A., 780.
effects of carbon monoxide and of hydrogen cyanide on, shown by vital stains, A., 896.
action of substances dissolved from glass on, A., 409.
distribution of potassium in, A., 1017.
Feulgen's reaction for nuclei of, A., 269.
living, permeability of, A., 1012.
osmosis in, A., 1520.
lethal action of radiant energy on, A., 1414.
ultra-violet absorption spectra of compounds derived from, A., 1444.
mature, models of, A., 42.
- Cells**, plant. See Plant cells.
- Cellite**, molecular size of, A., 331.
state of, in solution, A., 965.
dynamic viscosity of solutions of, A., 31.
- Cellobiose**, reactions of, A., 1109.
- oclaacetate***, dielectric constant of, in chloroform, A., 701.
diffusion of, in organic liquids, A., 1072.
solubility of, in binary organic liquids, A., 26.
reaction of, with liquid ammonia, A., 330.
- Cellophane**, as semi-conductor in study of electrophoresis, A., 1321.
adsorption of basic dyes on, A., 697.
imbibition of water by, B., 300.
adhesives for, (P.), B., 739.
inorganic colouring materials for, B., 398.

Cellophane, coating of sheet materials with, (P.), B., 448.
 membranes. See under Membranes.
 suspensions, electrophoretic velocity of, A., 578.
 culture of micro-organisms on, A., 1031.
Cellotriose, and its derivatives, A., 1226, 1308.
 α - and β -Cellotrioses, *hendecaacetates* of, A., 1226.
Celluloid, coating of, with silver, (P.), B., 107.
 non-inflammable substitute for, (P.), B., 1137.
 light-stable, nitrocellulose for, B., 1136.
Cellulose, A., 965, 1226.
 and its derivatives, A., 1110; B., 221, 445.
 mol. wt. of, A., 1062.
 and its derivatives, mol. wts. of, A., 688.
 structure of, B., 142.
 structure and properties of, B., 299.
 correlation of structure and plastic properties of, B., 257.
 X-ray structure of, A., 1308.
 and its derivatives, A., 922.
 X-ray diffraction patterns of, A., 18.
 carboxylic acid groups in, A., 736.
 methyl alcohol and pyridine in lattice of, A., 687.
 sources of, A., 1435.
 manufacture of, (P.), B., 588, 896.
 after pretreatment of raw materials with nitric acid, B., 445.
 from lignocellulosic materials, (P.), B., 184, 986, 1137.
 from *Musa* fibres, (P.), B., 624.
 from tobacco stem and stalk, B., 1118.
 from vegetable matter, (P.), B., 799, 1089, 1137.
 from wood, etc., (P.), B., 1089.
 corrosion-resistant alloys for, B., 27.
 heat-conservation in liquor recovery in, B., 400.
 surface phenomena in, B., 845.
 and half-stuff, (P.), B., 799.
 nitric acid process for recovery of, from bagasse, B., 586.
 treatment of, and its esters, (P.), B., 447.
 with alkalis and acids, swelling in, B., 1135.
 refining of, B., 184.
 drying of, B., 221.
 bleaching of. See under Bleaching.
 hydration of, in beating, B., 399.
 and its derivatives, refractivity of, A., 148.
 heat of acetylation of, B., 666.
 heat of sorption of water vapour on, B., 1135.
 heat of wetting of, B., 667.
 evaporation of water from, B., 299.
 control of viscosity of, by activated bleaching, B., 57.
 absorption by, of direct dyes, B., 59.
 of substantive dyes, B., 989.
 of sodium hydroxide, B., 401.
 of water, B., 221.
 adsorption compression of water on, B., 398.
 penetration of water into crystal lattice of, B., 488.
 hygroscopic moisture of, B., 1135.
 activity of, at water surfaces, B., 350.
 solution of, (P.), B., 667.
 by cuprammonium process, (P.), B., 720.
 solutions, nomograms for calculation of fluidity of, B., 587.
 cuprammonium solutions of, A., 965.

Cellulose, swelling of, B., 401.
 in alkali, B., 267, 303.
 colloidal behaviour of, B., 1087.
 chemistry of, A., 70.
 acetolysis of, A., 1226.
 acetylation of, A., 201; (P.), B., 1089.
 benzoylation of, A., 1227.
 benzylating temperature of, B., 265.
 interferometric determination of degree of esterification of, A., 736.
 solvents for etherification of, (P.), B., 987.
 products of hydrolysis of, B., 447.
 nitration of, B., 57, 299.
 decomposition of, in nitration and denitration, B., 1087.
 oxidation of, B., 1087.
 effect of reduced vat dyes on hypochlorite oxidation of, B., 353.
 photochemical reaction of, A., 1298; B., 264.
 sulpholysis of, A., 610.
 transformation of, into its polymeric-analogous triacetates, A., 1226.
 effect of alkaline solutions on, B., 623.
 action on, of liquid bromine, A., 478.
 of liquid chlorine, iodine, and iodine monochloride, A., 1485.
 of copper-amine solution, B., 16.
 of metallic hydroxides, A., 1074.
 and its nitrate, of sulphuric and nitric acids, B., 265.
 for paper and rayon, solubility curves of, B., 718.
 use of, in synthetic plastics and resins, B., 1151.
 filler for rubber from, (P.), B., 1090.
 moisture-proofing of sheets of, (P.), B., 353.
 production of wrapping materials from, (P.), B., 562.
 water-vapour permeability of wrapping materials from, B., 1088.
 and its derivatives, production of iridescent surfaces on, (P.), B., 722.
 cytolysis of, A., 124.
 decomposition of, by bacteria, A., 898.
 fermentation of, A., 125.
 by bacteria from horse dung, B., 372.
 thermophilic fermentation of, A., 1167.
 fermentation of products of hydrolysis of, B., 824.
 of marine algae, A., 550.
 of foods and feeding-stuffs, B., 428.
 in diet of mice and rats, A., 240.
 methylene-blue index of, B., 798.
 determination of, by single-stage process, B., 844, 1038.
 in faeces, A., 648.
 and lignin, in plant products, B., 398.
 determination in, of carboxyl groups, by conductometric titration, A., 201.
Cellulose, alkali-, manufacture of, (P.), B., 1040.
 accelerated maturing of, (P.), B., 986.
 ripening of, (P.), B., 96.
 acetylation of, with acetic anhydride, B., 299.
 soluble, determination of, B., 142.
 hemp, X-ray structure of, A., 687.
 native, X-ray structure of, A., 922.
 from cotton wool, A., 610.
 native and regenerated, composition and hygroscopicity of, B., 142.
 pulverised, production of, (P.), B., 351.
 regenerated, treatment of, (P.), B., 351.
 coating of, (P.), B., 961.
 production of films and sheets of, (P.), B., 1138.
 production of sheets of, (P.), B., 300.

Cellulose, regenerated, production of sheets, bands, etc., of, (P.), B., 143.
 production of decorative sheets of, (P.), B., 1138.
 laminating sheets of, (P.), B., 1090.
 production of sponge-like articles from, for electric insulation, (P.), B., 491.
 soda-, action of carbon disulphide on, A., 1486.
 sphagnum, A., 421.
 straw, effect of cooking and bleaching on properties of, B., 445.
 sulphate-, by-products from manufacture of, (P.), B., 352.
 accelerated cooking of, B., 1136.
 effect of cooking on fibre structure in, B., 764.
 sulphite-, manufacture of, from spruce, B., 586.
 from spruce damaged by red and blue rot, B., 446.
 effect of cooking on fibre structure in, B., 764.
 chemistry of cooking of, B., 490.
 extracts of, as mordants in dyeing of leather, B., 401.
 tanning with extracts of, B., 241, 817.
 abnormal behaviour of skins in waste liquors from, B., 1007.
 production of tanning extracts from waste liquors from, B., 1007.
 toxicity of effluents from, A., 394.
 bleached, lignin from, B., 718.
 wood, action of nitrating acids on, B., 844.
Cellulose fibres, structure of, and its influence in papermaking, B., 399, 1136.
 micellar structure of, B., 221.
 dimensions of micelles of, B., 719.
 X-ray analysis of, B., 220.
 crystallite orientation of, A., 286.
 purification of, (P.), B., 450.
 bleaching of. See under Bleaching.
 treatment of, for dyeing, (P.), B., 589.
 influence of adsorbed water on refractivity of, A., 148.
 adsorption of sodium hydroxide by, A., 29.
 kinetics of acetylation of, A., 42.
 nitration and denitration of, B., 540.
 manufacture of waterlaid webs of, (P.), B., 944.
 films, composite, manufacture of, (P.), B., 721.
 non-inflammable, composition for, (P.), B., 987.
 foils, cementing of films and, (P.), B., 987.
 materials, acid groups of, B., 623.
 treatment of, (P.), B., 223.
 fireproofing of, (P.), B., 304.
 pulping of, (P.), B., 624, 1139.
 waterproofing of, (P.), B., 304.
 sorption of water vapour on, A., 1315.
 discoloration of, in contact with vulcanised rubber, B., 738.
 production of organic acids by alkaline fusion of, (P.), B., 715.
 decomposition of, (P.), B., 332.
 saccharification of, by Scholler method, B., 329.
 adsorptive charcoal from, B., 340.
 production of oxalic acid from, B., 1062.
 manufacture of metallised sheets of, (P.), B., 624.
 manufacture of sheets and films of, (P.), B., 799.
 fibrous, production of decorative articles, protective linings, etc., from, (P.), B., 668.

Cellulose materials, moisture-proof, manufacture of, (P.), B., 351.
 plastic, production of sheets of, (P.), B., 97.
 vegetable, preservation of, (P.), B., 1041.
 membranes. See under Membranes.
 products, adsorption of organic liquids by, B., 488.
 pulp, manufacture of, from straw and wood, B., 587.
 refining of, (P.), B., 96.
 hydration of, (P.), B., 800*.
 carbonisation of waste lyes from, (P.), B., 582.
Cellulose acetate, manufacture of, (P.), B., 624.
 treatment of, in alkaline media, (P.), B., 98.
 fractionation of, B., 764.
 uses of organic solvents in processing of, B., 800.
 cell for dry-spinning of, (P.), B., 668.
 dyeing of. See under Dyeing.
 plasticisers for, (P.), B., 239, 367, 762, 914.
 refractive index of, A., 148.
 dielectric properties of, in chloroform and chloroform-benzene, A., 701.
 reduction of viscosity of, (P.), B., 350.
 solubility of, A., 822.
 solvent for, and composition therefrom, (P.), B., 599.
 solvents for, (P.), B., 367.
 colloidal particles of, A., 163.
 manufacture of capsules for sealing bottles from, B., 446.
 compositions from, (P.), B., 239.
 with natural resins and gum, (P.), B., 735.
 coating of articles with, (P.), B., 816.
 prevention of creasing of fabrics of, (P.), B., 19.
 films, production of, B., 540; (P.), B., 144, 266.
 permeability of, B., 109.
 undeformable by water, B., 95.
 manufacture of patterned films, etc., of, (P.), B., 98.
 lacquers from. See under Lacquers.
 tempering of plastics of, (P.), B., 961.
 moisture proofing of sheets of, (P.), B., 1139.
 acetone-soluble, manufacture of, (P.), B., 301.
 swollen, deformation of, A., 1202.
 See also Cellite.
 acetate and nitrate, tautening of aeroplane fabrics by dopes of, B., 775.
 acetate phthalate, production of benzyl esters of, (P.), B., 1137.
 acetates, X-ray diagrams of, A., 42.
 production of, for thread manufacture, (P.), B., 401.
 separation and fractional extraction of, A., 70.
 heats of solution of, B., 844.
 viscosity of, A., 610.
 crystalline, determination of molecular weight of, by osmometric measurements, A., 201.
 2,3-diacetate, preparation of, A., 201.
 triacetate, modification of solubility of, (P.), B., 987.
 triacetates, solidification of chloroform solutions of, A., 445.
 butyrate, production of, (P.), B., 720.
 derivatives, manufacture of, (P.), B., 58, 96, 588, 667.

Cellulose derivatives, treatment of, (P.), B., 17, 144.
 plasticisers for, (P.), B., 161, 194, 599, 624, 642, 735, 1137.
 plasticisers for compositions of, (P.), B., 1153.
 dipole moments of, A., 163.
 heats of solution and swelling of, B., 844.
 solubility of, A., 822; B., 623.
 dielectric properties of organic solutions of, A., 445, 1305.
 thixotropy of solutions of, A., 445.
 precipitation of, from colloidal solutions, (P.), B., 532.
 production of oil-in-water dispersions of, (P.), B., 735.
 protection of surfaces of, against light, (P.), B., 402.
 effect of thiocarbamide on fastness of dyes on, B., 492.
 production of articles of, (P.), B., 1056.
 quick-setting cement from, (P.), B., 684.
 coating compositions from, (P.), B., 1152.
 manufacture of filaments, foils, etc., of, (P.), B., 765.
 manufacture of artificial filaments from, (P.), B., 987.
 manufacture of artificial filaments, foils, etc., from, (P.), B., 1040.
 manufacture of artificial filaments, etc., of reduced lustre from, (P.), B., 448.
 manufacture of artificial filaments, yarns, films, etc., from, (P.), B., 224, 266, 588.
 supports for films of, (P.), B., 930.
 swelling of films of, and relative micellar dimensions, B., 719.
 reduction of porosity of films, foils, etc., of, (P.), B., 18.
 production of non-curling films of, (P.), B., 1167.
 electrical insulating materials from, (P.), B., 910.
 lubricant from, (P.), B., 892.
 production of moulding compositions from, (P.), B., 69.
 manufacture of photographic supports from, (P.), B., 491.
 plastic compositions from, (P.), B., 320.
 production of sheets of, (P.), B., 300.
 manufacture of threads, ribbons, tubes, etc., from, (P.), B., 944.
 manufacture of tubes of, (P.), B., 351.
 containing phosphorus, manufacture of, (P.), B., 351.
 polymeric-homologous, relative mol. wt. of, A., 849.
 esters, micellar structure of fibres of, A., 286.
 production of, (P.), B., 96, 97*, 266, 447, 668, 720, 1137.
 recovery of, (P.), B., 350, 351.
 treatment of, in alkaline liquors, (P.), B., 1042.
 removal of solvents and plasticisers from, (P.), B., 861.
 plasticisers for, (P.), B., 194, 239, 642, 799, 861, 914, 960.
 viscosity of, A., 822.
 viscosity and thixotropy of solutions of, A., 1074.
 stabilisation and reduction of viscosity of, (P.), B., 184.
 1,4-dioxan as solvent for, (P.), B., 110.
 saponification of, (P.), B., 765, 943.

Cellulose esters, thread-forming power of solutions of, B., 719.
 compositions from, (P.), B., 1137.
 manufacture of fabrics of, (P.), B., 402.
 manufacture of filaments, threads, ribbons, yarns, etc., of, (P.), B., 17, 765.
 saponification of filaments, threads, yarns, etc., of, (P.), B., 720, 846, 1138.
 manufacture of artificial films, foils, fibres, etc., from, (P.), B., 400.
 plasticisers for films of, (P.), B., 110.
 manufacture of flexible films of, (P.), B., 266.
 manufacture of lacquers, films, plastic masses, etc., from, (P.), B., 1056.
 manufacture of coloured materials of, (P.), B., 450.
 moisture-proofing composition from, (P.), B., 1139.
 production of moulding compositions from, (P.), B., 1057.
 production of moulding powders from, (P.), B., 162.
 manufacture of plastic compositions from, (P.), B., 737.
 stripping of coloured rayons of, (P.), B., 303.
 manufacture of sheets from, (P.), B., 266, 491*.
 delustring of textile materials of, (P.), B., 848.
 of dicarboxylic acids, manufacture of, (P.), B., 765.
 fatty acid, properties of, A., 434.
 with higher aliphatic acids, mol. wt. of, A., 965.
 mixed, production of, (P.), B., 351.
 unsaturated, production of, (P.), B., 799.
 others, B., 265, 299.
 manufacture of, (P.), B., 184.
 manufacture and properties of, B., 57.
 plasticisers for, (P.), B., 194.
 compositions from, (P.), B., 1137.
 manufacture of fabrics of, (P.), B., 402.
 manufacture of lacquers, films, etc., from, (P.), B., 1056.
 finishes for leather from, (P.), B., 1058.
 production of moulding powders from, (P.), B., 162.
 stripping of coloured rayons of, (P.), B., 303.
 aliphatic, production of, (P.), B., 943.
 aralkyl, purification of, (P.), B., 987.
 formate, determination of formyl group in, B., 1135.
 hydrate, foils of, (P.), B., 944.
 dinitrate, structure of, A., 286.
 di- and tri-nitrates, formation of, B., 540.
 trinitrate (*nitrocellulose*), manufacture of, (P.), B., 351.
 from wood pulp, B., 126.
 washing of, (P.), B., 944.
 mechanism of nitration and properties of, B., 265, 540, 896.
 denitration of, B., 265.
 by diphenylamine during total-time stability test, B., 831.
 plasticisers for, B., 598; (P.), B., 13.
 softener for, from castor oil, (P.), B., 159.
 refractive index of, A., 148.
 composition for protection of, against ultra-violet light, (P.), B., 161.
 influence of boiling on viscosity of, B., 718.

Cellulose trinitrate, viscosity of solutions of, A., 291.
 in ether-alcohol, A., 580.
 viscosity of colloidal solutions of, A., 163.
 lowering viscosity of, A., 31; (P.), B., 266, 668.
 viscosimeters for solutions of, B., 785.
 solubility and viscosity of, B., 764.
 solubility of, A., 292.
 in alcohol-ether-acetone mixtures, B., 718.
 solvents for, and composition therefrom, (P.), B., 367.
 solutions, structure of, A., 1319.
 osmotic pressure of, A., 445.
 compatibility of, with French varnish, B., 599.
 crystal structure of, A., 434.
 gelatinisation of, by alcohol-ether mixtures, B., 831.
 by amides and ketones, B., 666.
 colloidal particles of, A., 163.
 organosols, coagulation of, by electrolytes, A., 1319.
 action of acetone on, B., 1039.
 action of strong and weak bases on, A., 701.
 action of solutions of, on metals, rubber, etc., B., 417.
 adhesive from, (P.), B., 281, 642.
 production of coatings of, on metal foils, (P.), B., 684.
 composition from, (P.), B., 914.
 ageing of films of, B., 540.
 protective overcoatings for films of, (P.), B., 278.
 coloured moulding composition from, (P.), B., 1152.
 stabilisation of, (P.), B., 351.
 effect of moisture and calcium carbonate on stability of, at 110°, B., 703.
 light-stability of, B., 1136.
 Taliani stability test for, B., 288.
 stable, production of, (P.), B., 447.
 determination of stabilisers in, B., 575.
 nitrates, classification of, in respect of micelles, B., 265.
 vegetable fibres as substitutes for cotton in production of, B., 16.
 separation of, B., 623.
 properties of, in relation to nitrating baths, B., 666.
 low-viscosity, properties of, B., 1135.
 nitroacetate, production of, (P.), B., 987, 1137.
 production of fibres of, (P.), B., 351.
di- and *tri-n*-octoates, A., 736.
 stearate, production of, B., 299.
 sulphates, manufacture of, (P.), B., 144.
 xanthate, production of, B., 844.
 decomposition of, B., 299.
 effect of oxygen on, B., 1135.
 sodium xanthate, stability of solutions of, B., 587.
 α -Cellulose, manufacture of, (P.), B., 765.
 α -, β -, and γ -Celluloses, determination of, B., 142.
Cellulosexanthic acid thioanhydride, A., 202.
Cement, research on, in 1934, B., 1095.
 manufacture of, (P.), B., 24, 62, 189, 229, 357, 456, 548*, 632, 950, 1045.
 apparatus for, (P.), B., 24.
 rotary kilns for, (P.), B., 950.
 treatment of raw materials for, (P.), B., 769.
 agglomeration of raw materials for, B., 546.

Cement, manufacture of, drying and heating of materials for, (P.), B., 49.
 flotation of raw materials for, B., 546.
 pre-heating of raw materials for, (P.), B., 357.
 determination of humus matter in sand for, B., 455.
 from residues from acetic acid manufacture, B., 1036.
 from siliceous materials, (P.), B., 408.
 and sulphur trioxide, from phosphogypsum, B., 671.
 treatment of, (P.), B., 852.
 with calcium chloride, B., 451.
 burning of, kilns for, (P.), B., 308.
 in blast kilns, B., 407.
 effect of burning on concrete lining of rotary furnaces for, B., 591.
 heat and material balances in rotary kilns for, B., 591.
 perfect and imperfect combustion in kilns for, B., 707.
 gas volumes and velocities in rotary kilns for, B., 903.
 trial burning of raw materials for, B., 805.
 apparatus for drying, calcining, etc., of, (P.), B., 657.
 aggregates for, (P.), B., 675.
 mixture for, (P.), B., 189.
 specific heat of raw mixes for, B., 1096.
 use of bituminous shale in, B., 805.
 mixtures of tale and, B., 271.
 systems of lime, alumina, silica, and ferric oxide in, B., 675.
 effect of composition on properties of, B., 1044.
 electrostatic theory of hardening of, B., 852.
 control of setting time of, B., 805.
 heat of setting of, B., 150, 547.
 heat of hydration of, B., 1096.
 effect of water on hydration and heat effect during setting of, B., 497.
 setting inhibitors for, B., 228.
 grain-size measurements in, B., 24.
 particle-size distribution of, B., 902.
 opacity factor in surface determinations on, B., 497.
 variation of length of test pieces of, with atmospheric humidity, B., 902.
 combination of water and strength of, B., 455.
 effect of moisture on electrical resistance of, B., 407.
 effect of steam treatment on thermal expansion of, B., 271.
 fused, B., 150.
 adhesion, capillary force, and hardening of, B., 592.
 determination of Vicat modulus of, B., 24.
 bleeding of, B., 592.
 effect of sea- and fresh water on, B., 631.
 painting and preservation of, B., 150.
 inorganic gels for waterproofing of, (P.), B., 189.
 effect of granulometric composition of, on pastes, mortars, and concretes, B., 769.
 for acid-proof brickwork, (P.), B., 950.
 sheets of asbestos and, (P.), B., 308.
 paint from, (P.), B., 456.
 decorative surfacing materials from, (P.), B., 951.
 for roads, B., 1143.
 clinker, grinding of, B., 61.
 determination in, of free lime, B., 24.
 sludge, resistance viscosimeter for, B., 681.

Cement slurry, burning of, (P.), B., 632.
 device for introduction of, into kilns, (P.), B., 271.
 weights and volumes of, at various water contents and loss-on-ignition values, B., 726.
 testing of, B., 455.
 determination of, in hydraulic concrete, B., 726.
 determination in, of lime, B., 99, 497.
 of free calcium hydroxide, B., 455.
Cement, acid-resistant, filler for, from aluminium chloride production, B., 950.
 acid- and water-proof, (P.), B., 632.
 alumina, hardening of, B., 769.
 asphalt, B.S.I. specifications for, B., 1080.
 in Boulder Dam, B., 591.
 heat of hydration of, B., 228.
 clay-estrich gypsum, B., 725.
 clinkerless slag, influence of burning temperature of anhydrite, gypsum, and dolomite on, B., 101.
 coloured, manufacture of, (P.), B., 102, 409.
 dental. See Dental cement.
 flooring, magnesite for, B., 547.
 glycerol-litharge, B., 228.
 volume stability of, B., 726.
 lead glycerate in, B., 851.
 glinit, unslaked lime in, B., 308.
 action of hydrochloric acid on, B., 308.
 gypsum, manufacture of, (P.), B., 727.
 hardened, chemical and photographic examination of, B., 950.
 action of salt solutions on, B., 1096.
 heat-insulating, (P.), B., 853.
 high-grade, limit of lime saturation in, B., 1045.
 hydraulic, manufacture of, (P.), B., 102.
 production of, for roads, (P.), B., 675.
 refractory, B., 308; (P.), B., 951.
 iron, B., 496, 497, 726, 902.
 Keene's, manufacture of, (P.), B., 229.
 low-heat, B., 591.
 magnesia, porous, (P.), B., 994.
 magnesium, manufacture of floors of, (P.), B., 632.
 masonry, B., 308.
 oil-well, bibliography on, B., 950.
 Portland, constitution of, B., 675.
 calculation of composition of, B., 675.
 manufacture of, (P.), B., 271, 308, 456.
 burning process in, B., 61.
 by calcium hydroxide process, B., 592.
 from residue from aluminium chloride production, B., 1095.
 use of blast-furnace slag in, B., 725.
 from calcium sulphate and clay, B., 150.
 from gypsum, B., 23.
 from volcanic ash and limestone, B., 307.
 and iron, (P.), B., 503.
 and sulphur dioxide, from gypsum, B., 146.
 and sulphuric acid, from gypsum, B., 671.
 chemistry of, B., 993.
 relation between composition and properties of, B., 592.
 specifications for, B., 228, 455.
 grinding of, (P.), B., 769.
 fineness of grinding and lime saturation of clinker for, B., 1143.
 fineness of, B., 902.
 chemistry of, B., 1095, 1143.
 hydration, setting, and hardening of, B., 228.

- Cement, Portland, absorption of water by, during hardening, B., 805.
 setting time of, B., 455.
 contraction and heat evolution in setting of, B., 725.
 "false" set of, B., 725.
 variations in thermal-expansion coefficients of, B., 725.
 rate of hydration and strength of, B., 357.
 compounds in, B., 357.
 effect of calcium chloride on, B., 769.
 trass and free calcium hydroxide in, B., 592.
 clay of, B., 307, 357, 497.
 combination of magnesia in, B., 23.
 action of water on, B., 407.
 corrosion of, by water, B., 1045.
 deterioration of concrete from, B., 805.
 clinker, constitution of, B., 150.
 influence of magnesia in, B., 547.
 high-alumina, iron oxide of, B., 357, 497.
 high-silica, iron oxide in, B., 497.
 manganese-chrome, resistance of, to sulphuric acid, B., 307.
 manganic oxide-chromic oxide, B., 271.
 special, B., 271, 307.
 white, manufacture of, in rotary kilns, (P.), B., 102.
 determination in, of alkalis, B., 547.
 puzzuolana, manufacture of, (P.), B., 632.
 control tests for, B., 675.
 behaviour of, at high temperatures, B., 1096.
 refractory, B., 726.
 set, free calcium hydroxide in, B., 228.
 preparation of thin sections of, B., 1143.
 sidero-, physico-chemical properties of, B., 725.
 silicate, formation of crystalline compounds in hardening of, B., 23.
 sulphur, admixtures for improvement of, B., 61.
 waterproof, production of, (P.), B., 675, 903.
 water-resistant, manufacture of, (P.), B., 806.
 zinc, composition of, B., 726.
- Cement articles, mixtures for, (P.), B., 189.
 Cement pipes. See under Pipes.
 Cement works, wet-sieving for control tests in, B., 726.
 Cementite (iron carbide), eutectoid for formation of, A., 693.
 equilibria of, with iron, A., 291.
 metastability of, B., 633.
 etching of, in steel, B., 457.
- Centaur, lesser. See *Erythraea centaureum*.
- Centrifugal apparatus, (P.), B., 1121.
 automatically-timed, (P.), B., 4.
 bowls, (P.), B., 4, 930.
 with sludge valves, (P.), B., 290.
 drums, discharge nozzles for, (P.), B., 1027.
 force, nomogram for, A., 321.
 machines, (P.), B., 50, 210, 532, 610, 706.
 separators. See under Separators.
- Centrifuges, (P.), B., 787.
 buckets for, (P.), B., 787.
 prevention of damage to, (P.), B., 658.
- Ceramics, manufacture of, (P.), B., 993.
 economy of electric firing in, B., 1143.
 firing of, B., 725.
 electric furnaces for, B., 851.
 particle-size in raw materials for, B., 356.
 use of dunite in, B., 453.
 use of Mariupol minerals in, B., 725.
- Ceramics, red selenium glass as colouring matter for, B., 591.
 refractory oxide, B., 307.
- Ceramic articles, manufacture of, (P.), B., 631, 805.
 decoration of, with metals, (P.), B., 805.
 bodies, relations between fineness of particles and plasticity of, B., 850.
 effect of burning on porosity of, B., 674.
 permeability of, to gases at high temperatures, B., 630.
 use of talc in, B., 804.
 highly-porous, (P.), B., 769.
 diaphragms, structure of, B., 545.
 masses, fine, impurities in, B., 1143.
 materials, production of, (P.), B., 356, 805.
 colouring of, (P.), B., 356.
 resistance of, to softening under load, B., 591.
 effects of microbiological activity during ageing of, B., 496.
 joining of glass to, (P.), B., 496.
 artificial teeth from, B., 674.
 fine, drying of, B., 1143.
 glazed, influence of glass phase in, B., 674.
 moulding, resistance viscosimeter for, B., 681.
 pigments. See under Pigments.
 products, manufacture of, from ashes, (P.), B., 546.
 prevention of scumming of, with barium hydroxide, B., 850.
 glazed, production of, (P.), B., 454.
 slabs, production of, (P.), B., 407.
 slips, of high density, B., 804.
 ware, production of, (P.), B., 407.
 physics and chemistry of firing of, B., 630.
 oxidation of, during firing, B., 851.
 water-smoking of, B., 545.
 porous, hardening of, (P.), B., 456.
 white, effect of talc in, B., 992.
- Cereals, germination of, in media of different pH, A., 132.
 microscopy of seed-coats of, B., 780.
 treatment of germs of, (P.), B., 700.
 influence of rainfall on yield of, in relation to manuring, B., 1158.
 effect of potassium-nitrogen ratio in soils on plants of, B., 72.
 weed control in, on highmoor soils, B., 73.
 effect of temperature on nitrogen content and rust-resistance of, A., 554.
 effect of mineral nutrition on sensitivity of, to rusts, B., 117.
 drying apparatus for, (P.), B., 434.
 influence of potassium salts on resistance to mildew of, B., 1060.
 selective injury to, by sodium chlorate, B., 472.
 action of amylokinase and trypsin on amylase content of, A., 121.
 dextrinisation of starch in, (P.), B., 748*.
 sterol content of, A., 1434.
 production of flakes of, (P.), B., 876.
 production of beverages from, (P.), B., 173, 827*.
 production of coffee substitutes from, (P.), B., 1116.
 production of foods from, (P.), B., 1067.
 rachitogenic action of, A., 1025.
 winter, effect of temperature on germination and growth of, A., 131.
 young, control of weeds in, B., 646.
 determination in, of nitrogen, B., 250.
- Cereal products, determination in, of moisture, by distillation with tetrachloroethane, B., 1114.
- Cerebrosidosis, experimental, A., 515.
 Cerebrospinal fluid, biology of, A., 512.
 equilibrium of bromides between blood and, A., 881.
 calcium and phosphorus in, A., 648.
 glyoxaline compounds in, A., 107.
 magnesium of, in relation to blood-magnesium, A., 1005.
 prolactin content of, A., 648.
 sodium content of, A., 773.
 sulphur in, A., 1399.
 content of urica in, A., 641.
 silicotungstic acid reaction of, A., 1399.
 reaction of, in meningitis, A., 517.
 in paralysis, ultra-violet absorption spectrum of, A., 1399.
 xanthochromic, bilirubin in, A., 1005.
 determination in, of ascorbic acid, A., 1036.
- Cerebrum, effect of starvation on processes in, A., 1529.
- Cereus coryne*, alkaloid of, A., 674.
- Ceritartaric acids, potassium salts, A., 846.
- Cerium, arc and spark spectra of, A., 1438.
 ionised, spectrum of, A., 1183.
 chromospheric emission due to, A., 1046.
 electrodeposition of, from anhydrous organic solvents, B., 730.
 specific heat of, A., 21.
 effect of, on aluminium alloys, B., 771.
- Cerium alloys with magnesium, crystal structure of, A., 151.
- Cerium salts, magnetic birefringence of paramagnetic solutions of, A., 149.
- Cerous salts, magnetic birefringence of, in solution, A., 295.
 paramagnetic properties of, in solution, A., 14.
- Cerous chloride, magnetic susceptibility of, in aqueous solution, A., 1063.
 density of aqueous solutions of, A., 1201.
 hydroxide gels, effect of, on oxidation of sugars in air, A., 1328.
 action of, with hydrogen peroxide, A., 594.
 sulphate, equilibrium of, with potassium sulphate and water, A., 36.
- Ceric hydroxide sol, effect of, on oxidation of sugars in air, A., 1328.
 sulphate, determination of tin with, B., 64.
 sulphates, A., 934.
- Cerium determination:—
 determination of, colorimetrically, with gallic acid, A., 464.
- Cerin, and its derivatives, A., 1373, 1502.
- Cerimetry, internal indicator for, A., 1339.
- Cetacea, A., 646.
- Cetraria callata* f. *microphyllina*, depside from, A., 490.
- isoCetyl alcohol, from slash-pine, and its acetate, A., 864.
- Cetyl β -hydroxyethyl and $\beta\gamma$ -dihydroxypropyl sulphides, (P.), B., 1131.
 p-glyceryl ether, and its diphenylurethane, (P.), B., 1130.
- N-Cetyl- $\beta\beta'\beta''$ -tri-hydroxy-tert.-butylamine hydrobromide, (P.), B., 93.
- Cetylpyridinium chloride, Wien effect of aqueous solutions of, A., 37.
- n-Cetylsulphonic acid, sodium salt, A., 606.
- Cevanthridine, and its salts, A., 505.
- Cervine, and its derivatives, A., 505.
- Chaetophrachus villosus*. See Armadillos.
- Ch'ai Hu, constituents of roots of, A., 905.
- Chairs, treatment of stuffing for, (P.), B., 1088.

- Chalcocite**, relations of, to stromeyerite and argentite, A., 602.
identification of types of, with carbon arc, A., 1344.
- Chalcopyrite**, kernel roasting of, B., 152.
crystal structure of, A., 152.
separation of, in sphalerite, A., 841.
- Chalkones**. See Phenyl styryl ketones.
- Chao Kan**, essential oil from, A., 267.
vitamin-C content of, A., 262.
- Charcoal**, production of, (P.), B., 87.
from waste wood, B., 580.
non-volatile carbon in, B., 660.
adsorption by, influence of ultraporosity on, A., 160.
influence of carriers on, A., 1069.
effect of temperature on, of electrolytes, A., 818.
of halogens, A., 696.
of hydrogen, and its influence on catalytic activity, A., 940.
of iodine, B., 802.
of methylamines, A., 29.
of oxygen, A., 441.
of water vapour, A., 27.
chemisorption on, A., 27, 160, 1069.
density of carbon dioxide adsorbed on, A., 1457.
porosity of, A., 930.
swelling of, A., 29.
action of, on aqueous silver nitrate solutions, A., 1332.
reduction of carbon dioxide by, A., 44.
dehydrogenation of succinic acid by, A., 940.
use of, in non-ferrous foundries, B., 1049.
as a manure, B., 165.
active, X-ray structure of, A., 285.
classification of, B., 660.
production of, by zinc chloride process, A., 1457.
regeneration of, B., 660.
with hydrochloric acid, B., 437.
heat of adsorption of vapours from air by, A., 930.
heat of adsorption of organic vapours on, A., 696.
adsorption by, A., 1457.
of atmospheric ions, A., 1200.
of bromine and iodine, and their liberation, A., 930.
of vapours of ketones and esters, A., 929.
of organic vapours, and their desorption, A., 1068.
of sulphur dioxide, A., 159, 577.
of water and carbonyl chloride, A., 160.
of water mist, B., 479.
from spruce, pine, and bamboo, B., 85.
for gas masks, testing of, B., 832.
adsorptive, from cellulose materials, B., 340.
animal, degradation of nitrogenous cyclic compounds by, A., 1380.
artists', production of, (P.), B., 1082.
bone and carboraffin, clarification of sugar solutions for analysis with, B., 119.
decolorising, manufacture of, from quebracho tannin residues, B., 1079.
from corncobs, B., 884.
medicinal, determination of adsorptive power of, B., 523.
micro-crystalline, action of hydrogen with, A., 818.
palladised, action of, on cyclopentane derivatives, at high temperatures, A., 738.
sugar, A., 1069.
- Charcoal**, sugar, adsorption by, of styphnic acid, A., 28.
action of, on fluorescence from action of sulphuric acid on carbohydrates, A., 808.
active, decomposition of hydrogen peroxide by, A., 830.
wood, production of, (P.), B., 1033.
adsorption by, in solutions and gases, A., 1068.
improvement of adsorption capacity of, B., 834.
- Chasmanthin**, and its diacetate and methyl ether, A., 864.
- Chaulmoogric acid**, ethyl ether, toxicity of, A., 1533.
- Chaulmoogric acids**, and their derivatives, A., 82.
- isoChavivic acid**, synthesis of, A., 747.
- isoChavivic acid**, γ -bromo-, A., 747.
- Cheese**, manufacture of, (P.), B., 173.
from cream and milk, (P.), B., 122.
pasteurisation of milk for, B., 77.
at Treyvaux factory, B., 1161.
curing of, (P.), B., 827.
emulsification of, with sodium nuctaphosphate, B., 1161.
preparation for use in ripening of, (P.), B., 332.
biochemistry of ripening of, B., 781.
origin of acetoin and diacetyl in cultures for, B., 426.
calcium and phosphorus in, B., 77, 698.
calcium and phosphorus from milk in, B., 331.
colloid chemistry of, B., 427.
distribution of fat in, B., 874.
microscopy of, B., 521.
red discoloration of, in store, B., 331.
bacteriology of, B., 825.
poisoning by, B., 571.
effect of pectin on digestibility of, B., 426.
brick, salting of, by brine method, B., 1161.
- Cheddar**, manufacture of, (P.), B., 1021.
milk for, B., 43.
effect of pasteurising milk on nitrogenous decomposition in, B., 825.
crustless, manufacture of, B., 285.
Dutch, coloration of, B., 571.
rôle of lactic bacilli in, B., 122.
containing *Penicillium glaucum*, analysis of, B., 331.
Port-du-Salut, B., 781.
re-process, manufacture of, (P.), B., 380.
rindless, preservation of, (P.), B., 1067.
softened, production of, (P.), B., 477.
Swiss, control of fat content of, B., 874.
bacteriology of, B., 874.
determination in, of citric acid, B., 204.
of fat, B., 426.
refractometrically, B., 874.
- Cheimatobia brumata**, biology of control of, B., 472.
- Chelation**, A., 85, 862.
detection of, spectroscopically, A., 563.
- Chelidonic acid**, and 3:5-dibromo-, ethyl esters, *p*-nitrophenylhydrazones, A., 1378.
- ethyl hydrogen ester, A., 733.
- Chemical combination**, A., 302.
rôle of electrons in, A., 150.
compounds. See under Compounds.
constants of dissolved substances, A., 583.
constitution. See under Constitution.
diagrams, singular elements of, A., 583.
engineering. See under Engineering.
forces, quantum mechanics of, A., 15, 1305.
- Chemical industry**, safety precautions in, B., 833.
uses of blast furnaces in, B., 81.
ceramic materials for use in, B., 227.
application of dielectric constants in, B., 957.
application of microchemical analysis in, B., 177.
use of photo-electric cells in, B., 414.
uses of quartz, felspar, and clay in, B., 61.
prevention of accidents in, B., 177.
occupational poisoning in, B., 832.
pack, (P.), B., 706.
plant. See under Plant.
reactions. See under Reactions.
reactivity. See under Reactivity.
stoneware. See under Stoneware.
warfare. See under Warfare.
works, metals and alloys as constructional materials in, B., 554.
use of phenolic resins in, B., 466.
use of plastics in, B., 642.
industrial hygiene and sanitation in, B., 527.
- Chemiluminescence**, primary, diabatic reactions and, A., 1464.
- Chemistry**, physical methods in, A., 283.
use of photo-electric cells in, B., 558.
polarimetric methods in, A., 182.
application of radioactive methods in, A., 6.
application of, in building, B., 950.
in medicine, B., 748.
in the Bucheum, A., 1343.
comparative, A., 15.
organic. See Organic chemistry.
physical. See Physical chemistry.
- Chemotherapeutics**, action of, A., 1030.
antagonistic action of, A., 1030.
- Chemotherapy**, A., 109, 409, 537; B., 748.
- Chenopodium ambrosioides**, saponins of, A., 1040.
saponin and sapogenin of, A., 754.
- Chenopodium botrys**, oil from, B., 333.
- Chenopodiumsaponin**, and its potassium salt and derivatives, A., 754.
- Cherries**, processing of, B., 331, 428.
root stock effects with, A., 264.
control of case-bearer in, in Wisconsin, B., 327.
control of fruit fly on, B., 375.
substitutes for lead arsenate in, B., 743.
splitting of, in brine, B., 698.
glacé, processing of, B., 1020.
- Cherry juice**, chemical changes in fermentation of, B., 1017.
- Cherry water**, B., 41, 376, 824.
- Chestnuts**, constituents of, A., 1432.
Spanish edible, acid phlobaphen from, A., 906.
- Chickens**, feeding-stuff for, (P.), B., 123.
effect of feeding with viosterol and cod-liver oil on vitamin-A in eggs from, B., 971.
haemoglobin function in, A., 878.
vitamin-D requirements of turkeys, pheasants, and, A., 1287.
composition of meat of, B., 331.
gas storage of, B., 77.
action of irradiated ergosterol on, A., 547.
fate of antirachitic factor in, A., 261.
resistance of, to nematode infestation, A., 384.
battery-reared, foot disorders in, B., 522.
embryo, pharmacology of yolk-sac vessels of, A., 893.
growing, destruction of protein concentrates, by, A., 1272.

- Chickens, white Leghorn, carotene and vitamin-A requirements of, A., 261.
- Chicle. See Balata.
- Chicory, influence of manuring on sugar formation in, B., 38.
- Children, calcium, iron, magnesium, nitrogen, and phosphorus balances in, A., 114.
- tolerance of, to atropine, A., 119.
- action on, of atropine and of *d*- and *l*-hyoscyamines, A., 119.
- See also Infants.
- Chilomonas*, effect of organic acids and carbohydrates on growth of, A., 1539.
- Chilomonas paramacium*, growth of, in inorganic media, A., 1027.
- Chimpanzees, oestrin in placenta and pregnancy urine of, A., 902.
- China clay. See under Clay.
- China ware, Russian, microscopy of, B., 804.
- Chinch bugs, barriers and repellants for, B., 1013.
- Chinhsiung-chung. See *Aspongopus chinensis*.
- Chiniofon, testing of, B., 606.
- "Chin-shih-hu," alkaloids of, A., 764.
- Chitin, constitution and structure of, A., 753.
- acetylation of, A., 849.
- deamination of, A., 849.
- methyl ethers, A., 849.
- Chitosamic acid, synthesis of alkylamino-acids corresponding to, A., 1486.
- Chloral, decomposition of, and its catalysis by nitric oxide, A., 1466.
- derivatives, production of, (P.), B., 782.
- cyclic compounds from aromatic diamines and, A., 753.
- detection of, B., 828.
- Chloral hydrate, reaction of, with phenylhydrazine, A., 969.
- effect of yohimbine on action of, on blood-sugar, A., 893.
- distribution and determination of, in nervous tissues, A., 1018.
- determination of, in blood and urine, A., 394.
- Chloralides, of α -hydroxycarboxylic acid, formation of, A., 328.
- Chloramine, coating of, (P.), B., 100.
- speed of sterilisation by chlorine and, B., 927.
- determination of, in water, B., 1071.
- γ -Chloramines, and their reactions, A., 478.
- Chloramine-*T*, kinetics of reaction of, with hydrogen peroxide, A., 1207.
- germicidal potency of products of, B., 255.
- preparation of bandages, etc., of, (P.), B., 79.
- use of, as an oxidising agent in volumetric analysis, A., 56.
- Chloranil, use of, in detection of amines, A., 769.
- Chlorates. See under Chlorine.
- Chlorella*, temperature data for metabolism of, A., 263.
- Chlorella pyrenoidosa*, inhibition of photosynthesis in, by iodoacetamide, A., 1547.
- Chloretone, preservation of adrenaline solutions with, B., 123.
- effect of, on pressor action of adrenaline, B., 478.
- anhydrous, manufacture of, (P.), B., 620.
- Chloric acid. See under Chlorine.
- Chlorides. See under Chlorine.
- Chlorine e_6 dimethyl ester, benzoic anhydride compound of, A., 1382.
- dimethyl glycol ester, and its copper salt, A., 1383.
- isoChlorin e_6 , A., 1382.
- and its dimethyl ester and its copper salt, A., 1383.
- Chlorins, derivatives of methyl esters of, A., 871.
- Chlorine, motion of electrons in, A., 677.
- isotopes, A., 149.
- masses of, A., 5.
- laboratory preparation of, A., 1090.
- production of, electrolytically, anode for, (P.), B., 596.
- electrolytic cells for, B., 316.
- and sodium nitrate, from salt, B., 1141.
- purification of, (P.), B., 452.
- absorption spectrum of, A., 805.
- K X-ray spectrum of, A., 1046.
- spark spectrum of, A., 1291.
- scattering of X-rays by, A., 432.
- formation of negative ions in, A., 140.
- heat capacity of, A., 21.
- liquid, handling of, B., 99.
- action of, on cellulose, A., 1485.
- production of aqueous solutions of, (P.), B., 900.
- rate of evaporation of, from aqueous solutions, A., 439.
- velocity of sound in, A., 155.
- rate of hydrolysis of, A., 938.
- action of, on mixtures of coal and titanium dioxide, A., 942.
- on oxides, A., 453.
- on heated platinum, A., 711, 941.
- photochemical reaction of, with formaldehyde, A., 177.
- with hydrogen, A., 46.
- with methano and oxygen, A., 48.
- with ozone, A., 47.
- thermal reaction of, with formaldehyde, A., 586, 1107.
- with hydrogen, A., 39.
- protection of iron tanks against corrosion by, B., 1048.
- precautions in use of, in waterworks, B., 1072.
- germicidal action of, B., 128.
- hormonal regulation of, in children, A., 1283.
- active, A., 176.
- determination of, A., 52.
- Chlorine compounds, germicidal potency of, B., 255.
- Chlorine monoxide, electron diffraction structure of, A., 572.
- reaction of, with ammonia, A., 1334.
- dioxide, action of, on aliphatic and aromatic hydroxy-compounds, A., 621.
- action of, on organic compounds, A., 1374.
- mon*- and *di*-oxides, dipole moments of, A., 430.
- Hydrochloric acid, linking in, A., 917.
- photosynthesis of, A., 943.
- manufacture of, (P.), B., 21, 146.
- from chlorine and hydrogen, B., 848.
- catalytically, from chlorine and water, B., 722.
- and magnesium oxide, as by-products from carnallite extraction, B., 354.
- separation of, from solutions, (P.), B., 803.
- concentration of, by evaporation, (P.), B., 767.
- molecular constants of, A., 150.
- vibration-rotation band spectrum of, A., 806.
- ultra-violet absorption spectrum of, A., 805.
- and its salts, ultra-violet absorption spectra of, A., 9.
- Chlorine:—
- Hydrochloric acid, conductivity of mixtures of, with deuterium chloride in water containing deuterium oxide, A., 1078.
- formation of negative ions in, A., 140.
- ionic activities of, A., 1323.
- dipole moment of, in various solvents, A., 808.
- potential of solutions of, with and without sucrose, A., 308.
- hydrogen-ion mobility in aqueous mixtures of, with calcium chloride, A., 1324.
- Faraday effect for, A., 283.
- heat capacity of, A., 21.
- heat of absorption of, by organic liquids, A., 441, 1067.
- liquid, use of, in preparation of dichloroarsines, A., 997.
- solid, infra-red absorption spectrum of, A., 1300.
- b.p. of constant-boiling aqueous solution of, A., 1067.
- surface tension of solutions of, with sodium chloride, A., 1316.
- equilibrium of, with ammonia and water, A., 583.
- with titanium tetrachloride, A., 1461.
- action of, with methyl alcohol, A., 828.
- rate of reaction of, with sodium atoms, A., 1327.
- compounds of krypton and, A., 35.
- as reagent for proteins and their derivatives, A., 1391.
- containing selenium, yellow colour of, A., 181, 1334.
- standardisation of, with calcite, A., 315.
- detection of, in gastric contents, A., 1147.
- Chlorides, anodic behaviour of iron in solutions of, A., 1326.
- influence of pituitary and thyroid on distribution of, A., 1021.
- in gastric juice, A., 106.
- excretion of, after excessive water intake, A., 1399.
- inorganic acid, viscosity temperature coefficient of, A., 925.
- detection of, in presence of bromides, iodides, and thiocyanates, A., 462.
- determination of, with adsorption indicators, A., 1471.
- electrometrically and nephelometrically, A., 1336.
- by photometric titration, A., 1091.
- potentiometrically, A., 835, 947.
- by modified Volhard method, A., 316.
- volumetrically, A., 835.
- in body-fluids and tissues, A., 1436.
- in plants and ground waters, electro-metrically, A., 52.
- in salts, A., 1336.
- in presence of sulphides, volumetrically, A., 835.
- in presence of sulphides and thiocyanates, A., 1215, 1336.
- in presence of thiocyanates, A., 183.
- in water, colorimetrically, A., 316.
- Chloric acid, reduction velocity of, A., 452.
- oxidation of nitrous acid by, A., 173.
- as a plant poison, A., 254.
- Chlorates, direct oxidation of, at high pressures, A., 461.
- detection and determination of, A., 594.
- Perchloric acid, Raman spectrum of, A., 1190.

Chlorine:—

Perchloric acid, mixtures of, with sulphuric acid, A., 1474.
 action of, A., 715.
 explosive reaction of bismuth with, A., 834.
 use of, in steel analysis, B., 64.
Perchlorates, A., 1213.
 determination of, A., 183, 316.
Hypochlorites, stability of solutions of, B., 493.
 deterioration of solutions of, A., 1331.
 influence of vat dyes on oxidation by, B., 301.
 preservation of medicinal solutions of, B., 252.
 sterilisation of water with, B., 256.
 stable, production of, (P.), B., 226, 991.
 determination of available chlorine in solutions of, with sodium thiosulphate, B., 225.
Chlorine organic compounds, structure and toxic properties of, A., 1022.
 for sterilisation, (P.), B., 287.
 aliphatic, vibration frequencies of, A., 1053.
Chlorine detection and determination:—
 detection of, with resorufin, A., 183.
 in organic compounds, A., 876.
 in water, B., 208.
 by *o*-tolidine test, B., 128.
 determination of, in benzaldehyde, B., 261.
 in biological fluids, volumetrically, A., 906.
 in blood, A., 1262.
 in brain, A., 772.
 in organic compounds, argentometrically, A., 101.
 microchemically, A., 1258.
 in presence of bromine, A., 101.
 in tissues, A., 554, 906.
 in water, B., 928, 1024.
 by *o*-tolidine method, B., 480.
Chlorine ions, conductivity and equilibrium of, with silver and sodium ions in gelatin solutions, A., 825.
Chloritoid, from Dutchess County, New York, A., 60.
 analysis of, A., 1220.
Chloramines. See **Chloramines**.
Chlorococcum, production of vitamins by cultures of, A., 260.
polyChloro-compounds, A., 605.
 synthesis of, with aluminium chloride, A., 470.
Chloroform, electron diffraction structure of, A., 572.
 manufacture of, (P.), B., 839.
 heats of reaction and viscosities of mixtures of ether and, A., 439.
 ebullioscopic constant of, A., 294.
 active hydrogen in, A., 1222.
 volume changes in mixtures of, with benzene, A., 1456.
 vapour, photochemical oxidation of, sensitised by chlorine, A., 590.
 peroxidation of, A., 590.
 addition of, to *o*-chlorobenzaldehyde, A., 486.
 condensation of, with tetrachloroethylene, A., 470.
 catalytic reaction of, with dichloroethylene, A., 605.
 action of, on lipin-phosphorus content of, A., 779.
 effect of cardiac stimulants on impaired cardiac function due to, A., 526.
 effect of, on cholesterol in blood and organs, A., 1155.

Chloroform, anaesthetic, preservation of, B., 748.
 differentiation of carbon tetrachloride and, A., 958.
 detection in, of carbon tetrachloride, B., 442.
Chlorogalum pomeridianum, sapogenins of, A., 673.
Chlorogenic acid, formation of, in coffee poisoning, A., 117.
 determination of, colorimetrically, in coffee, B., 172.
Chlorogenin, and its derivatives, A., 673.
Chlorogonium, effect of organic acids and carbohydrates on growth of, A., 1539.
Chlorogonium euchlorum, carbonaceous and nitrogenous nutrition of, A., 1289.
Chlorohydrins, manufacture of, (P.), B., 584.
 cyclic, dehalogenation of, with ring curtailment, A., 616.
 α -**Chloroketones**, A., 621.
Chloroma, porphyrins in, A., 516.
Chlorophenols, dissociation constants of, A., 302.
Chlorophora excelsa, concretions in trunk of, A., 266.
Chlorophyll, A., 362, 503, 763, 871, 1134, 1177, 1382, 1383.
 fine structure of, A., 1383.
 formation of, A., 1288.
 effect of pyrrole compounds on, A., 1039.
 development of, in etiolated plants, A., 263.
 content of, in relation to photosynthesis, A., 794.
 purification of, A., 421.
 absorption and fluorescence spectra of, A., 145.
 band spectra of, A., 145.
 fluorescence of, A., 263, 1038.
 and assimilation, A., 794, 1177.
 colloid chemistry of, A., 165.
 photochemical reaction of, A., 1510.
 photodecomposition of, A., 421.
 conversion of vinyl group in, into hydroxyethyl group, A., 1134.
 derivatives, A., 1177.
 action of diazoacetic esters on, A., 871.
 decomposition products of, in stomach of herbivorous animals, A., 110.
 and ascorbic acid, A., 670.
 relation between vitamin-C and, A., 131.
 production of therapeutical preparations from, (P.), B., 1166.
 digestion of, *in vitro*, A., 1433.
 detection of, in tallow, B., 276.
Chlorophyll-a, fluorescence of solutions of, A., 12.
Chlorophyll-b, A., 503, 763.
Chlorophyll-c, non-existence of, A., 362.
Chlorophyll-a and **-b**, fine structure of, A., 1134.
 fluorescence spectra of, A., 905.
Chlorophyll porphyrins. See under **Porphyrins**.
Chloropierin, dielectric studies, of, A., 1304.
 velocity of thermal decomposition of, A., 1464.
 chemiluminescence of reaction of, with Grignard reagents, A., 147.
 effect of, on soils, B., 118.
 sub-surface treatment of soils with, for nematode control, B., 965.
 fumigation with, B., 335.
 insecticidal fumigation with, B., 374.
 fumigation of tobacco with, B., 45.
 control of nematodes with, B., 375.

Chloroplasts, reduction of silver salts at surface of, A., 131.
Chloroprene, A., 1221.
 plastic compositions from, (P.), B., 195.
hexaChloro-salts, crystal structure of, A., 433, 812.
Chlorosulphinic acid, ethyl ester, A., 326.
Chocolate, tempering machine for treatment of, (P.), B., 523.
 cooling of rollers of mills for, (P.), B., 754.
 refining of, (P.), B., 523.
 machine for, (P.), B., 286.
 effect of phosphatides on physical properties of, B., 698.
 milk, milk products for, (P.), B., 429.
 determination in, of fat and sugar, refractometrically, B., 172.
 of sucrose, B., 204.
Cholamide, A., 1237.
Cholanic acid, β -3-hydroxy-, and its methyl ester, A., 976.
alloCholanic acid, identity of, with α -seilanic acid, and its methyl and propyl esters, A., 754.
alloCholanic acid, 3-hydroxy-, and its methyl ester, and its acetate, A., 1371.
 degradation of, to androsterone, A., 1370.
Cholanthrene, and its picate, A., 968.
 synthesis of, A., 968, 1117.
 "Cholazyl," action of, on sympathetic ganglia, A., 529.
Cholecystokin, effect of, on gall-bladders, A., 1171.
Choleic acids, of carinogenic hydrocarbons, A., 1366.
Cholelithiasis, A., 1148.
Cholenic acid, dihydroxy-, isomerism of, with apocholic acid, A., 749.
 Δ^5 -**Cholenic acid**, 3-hydroxy-, A., 1125.
 and its methyl ester and its acetyl derivative, A., 1242.
Cholera vibrios, structure of, A., 1168.
 carbohydrates and proteins of, A., 786, 787.
Cholestan-6-one, derivatives of, A., 1493.
isoCholestan-6-one, and its oxime, A., 1493.
Cholestenone, preparation of, A., 1120.
Cholesterol, structure of, A., 81, 209.
 and carotene, A., 1493.
 isomeride of, A., 81.
 production of, from egg yolk, B., 825.
 separation of, from metacholesterol, A., 1363.
 and its derivatives, spectrography of, A., 616.
 electrophoresis of, A., 1523.
 solubility of, in acyclic amines, A., 1235.
 unimolecular films of, A., 442.
 sols, reducing action of, A., 1522.
 action of mercuric iodide on, A., 1120.
 chloroformate, condensation of, with alcohols and phenols, A., 745.
 citraconate, and bromo-, A., 1493.
 esters, enzymic synthesis of, A., 1416.
 in fat metabolism, A., 1015.
 succinate, crystal structure of, A., 152.
 derivatives, crystal structure of, A., 434.
mono- and **di-nitrophenylcarbamates**, A., 958.
 preparation of Δ^4 -androsten-17-ol-3-one from, A., 1370.
 preparation of dehydroandrosterone from, A., 1125, 1242.
 constitution of hydrocarbons from, A., 74, 75, 76.
 preparation of 1:2-cyclopentenophenanthrene from, A., 968.
 vitamin-D in ointment bases containing, B., 429.

- Cholesterol**, rôle of, in melano-flocculation, A., 776.
physiological effect of, A., 1155.
in the organism, A., 772.
formation of, in hæmolysis, A., 1519.
by saponin, A., 881.
by solanine, A., 881.
content of, in adrenals in fatigue, A., 523.
in blood, effect of irradiation on, A., 532.
influence of age on, A., 642.
control of, by kidneys, A., 230.
in foetal and maternal blood after pregnancy, A., 1392.
combination of, in blood-serum, A., 770.
effect of, on carbohydrates in blood and urine, A., 1015.
and its complexes with proteins in body-fluids, A., 517.
esterification of, during intestinal absorption, A., 113.
in lung autolysis, A., 533.
in heparinised and oxalated plasma and in serum, A., 1261.
content of, in pleural effusions, A., 1527.
heat-treated, properties of, A., 670.
serum, A., 103.
extraction of, A., 1261.
in dogs, effect of nembutal on, A., 1411.
detection of, A., 407.
determination of, colorimetrically, A., 270.
colour standard for, A., 1552.
by digitonin, A., 771, 1044.
by means of the torsion balance, A., 270.
in biological fluids, colorimetrically, A., 880.
in blood, A., 1392, 1518.
in blood, serum, and plasma, A., 230.
free and total, determination of, A., 1044.
Cholesterol, 7-hydroxy-, and its esters, A., 1363.
isoCholesterol, formula of, and its salts, A., 210.
chloride, A., 1493.
alloCholesterol, absence of, in the organism, A., 1264.
Cholesteroemia, after infra-red irradiation in castration, A., 770.
p-(Cholesterylcarbamyl)phenyl cholesteryl-carbonate, A., 745.
Cholesterylcarbonic acid, esters, A., 745.
Cholic acid, ethyl ester, 3-carbonate of, resorcinol and quinol esters of, A., 1366.
3- β -naphthyl- and 3-phenyl-carbonates of, A., 1366.
3-urethane and substituted methanes of, A., 1366.
methyleholanthrene from, A., 859.
in lung autolysis, A., 533.
apoCholic acid, isomerism of, with dihydroxycholenic acid, A., 749.
Cholic acids, determination of, in blood, A., 1000.
Choline, and its derivatives, A., 1411.
esters, manufacture of, (P.), B., 287.
in invertebrates, A., 1157.
orthophosphates, and their salts, A., 1486.
free, in blood, A., 508.
water-soluble precursor of, in kidneys and placenta, A., 1265.
content of, in muscle, A., 1003.
in human placenta, A., 233.
distribution of, in tissues, A., 1396.
action of, on sympathetic ganglia, A., 529.
prevention of fat deposition in liver by, A., 524.
and its esters, detection of, in tissue extracts, A., 1290.
determination of, in blood, A., 887.
- Choline-esterase** in corpuscles and sera of various species, A., 1416.
in invertebrates, A., 1536.
Chondrodite in Glenelg limestone, Inverness, A., 956.
Chondroitin compounds, production of, (P.), B., 124.
Chondroitinsulphuric acid, fermentation of, by *Bacillus pyocyaneus*, A., 111.
determination of, in cartilage, A., 111.
Chondrus crispus, nitrogen of polysaccharide complex from, A., 797.
Chorioepithelioma, œstrin in, A., 1425.
Chromal, B., 403.
tanning with, B., 469, 817.
Chromates. See under Chromium.
Chrome alum, Zeeman effect in absorption spectrum of, A., 1052.
Chrome yellow on strontium basis, B., 239.
Chromenochromones, A., 1130.
Chromic acid. See under Chromium.
Chromite, assay of, B., 905.
of Rhodes, enrichment of, B., 808.
Chromites. See under Chromium.
Chromium, occurrence of, in oxidised lead deposits, A., 60.
and its alloys, manufacture of, (P.), B., 362.
refining of, by vacuum distillation, B., 729.
spectra of, A., 1045.
infra-red arc spectrum of, A., 1183.
electrodeposition of, (P.), B., 29, 107.
theory of, B., 554.
apparatus for, (P.), B., 730.
under pressure, B., 28.
from chromic acid baths, B., 857.
from aqueous chromic acid solutions, B., 413.
electroplating with, (P.), B., 506, 1052.
theory and practice of, B., 678.
baths for, (P.), B., 107, 1052.
from chromic acid baths containing hydrofluoric acid, B., 460.
standards for, B., 772.
reactions in, B., 273.
influence of current density and temperature in, B., 413.
of automobile parts, B., 233.
of interior of hollow iron articles, B., 729.
of molybdenum and tungsten wire, (P.), B., 506.
of type metal, (P.), B., 811.
electroplating with nickel and, (P.), B., 909.
testing of coatings of, B., 192.
influence of iron on hardness of, B., 554.
specific heat of, A., 21.
oxidation-reduction equilibrium of, A., 704.
effect of, on cultivated plants, A., 553.
electrolytic, hardness of, B., 502.
influence of bath concentration on, B., 1051.
effect of hydrogen content on, B., 905.
specification for cathodic deposits of, B., 905.
peeling of, B., 679.
crystal structure of, A., 1450.
black, B., 233.
tervalent, oxidation of, to sexavalent chromium, A., 1339.
Chromium alloys, refining of, (P.), B., 504, 557.
with cobalt, (P.), B., 908.
for cutting tools, (P.), B., 505.
with gold, resistance, B., 232.
with iron, B., 594; (P.), B., 155.
manufacture of, (P.), B., 907.
- Chromium alloys**, with iron, m.p. of, B., 63, 499.
low-carbon, thermal expansion and transformation in, B., 1145.
with iron and nickel, austenitic, acceleration of tempering of, B., 904.
corrosion-resistant, (P.), B., 907.
with iron, nickel, and carbon, mechanical properties of, A., 23.
with iron and nitrogen, A., 1455.
with iron and silicon, carbon solubility of, A., 23.
with nickel, electroplating with, (P.), B., 274.
uses of, B., 361.
for electrical resistances, B., 1049.
with platinum, ferromagnetism of, A., 573.
Chromium bases (*chromiumammynes*), complex, A., 1471.
absorption spectra of, A., 10.
 p_H and absorption spectra of aqueous solutions of, A., 1202.
Chromium compounds, poisoning by. See under Poisoning.
detection of, in paintings, by infra-red reflection, A., 1216.
Chromium salts, mol. wt. of complexes in basic solutions of, B., 355.
Chromium carbides, A., 461.
chlorides, emission spectra of, A., 1187.
halides, thermal properties of, A., 574.
oxide, ferromagnetic, Raman spectrum of, A., 1301.
Chromous compounds, magnetic properties of, A., 436, 1453.
Chromic salts, colloid systems of, with ferric salts, A., 1320.
Chromic chloride, anhydrous, anomalous specific heat of, A., 1198.
hydroxido hydrosols, Burton-Bishop rule for, A., 700.
oxide, magnetic properties of mixtures of, with beryllium, calcium, copper, cadmium, and lead oxides, A., 440.
heat of adsorption of gases by catalysts of zinc oxide and, A., 1457.
adsorption by, of hydrogen and deuterium, A., 27.
of oxygen, A., 28.
gel, adsorption by, of gases, A., 28.
reaction of, with bromates, A., 834.
with zinc oxide, A., 944.
active, A., 51.
ferromagnetic, formula of, A., 834.
determination of, photometrically, in digestibility research, A., 1271.
sulphate, purification of, (P.), B., 147.
Chromic acid, study of ionisation of, with the glass electrode, A., 38.
solutions, electrolytic reduction of, A., 1330.
effect of, on electrodeposition of nickel, A., 1467.
use of, in determination of organic compounds, A., 1390.
Chromates, manufacture of, (P.), B., 269, 991.
from ores, (P.), B., 147.
cathode film in electrolysis of solutions of, A., 585.
action of hydrogen sulphide on, A., 1470.
pigment properties of, B., 109.
insoluble, action of hydrogen sulphide on, A., 1470.
detection of, A., 316.
determination of, iodometrically, A., 721.
with Liesegang rings, B., 645.

Chromium:—

Dichromates, sensitivity of skin to, A., 781.
 detection of, A., 316.
 organic indicator for titration with, A., 721.
 oxidation-reduction indicators for titration with, A., 56.
 titration curve of, with ferrous salts, A., 1205.

Chromites, amphoteric behaviour of, A., 35.

Chromium organic compounds:—
Chromium hexacarbonyl, and its organic derivatives, A., 314.
 crystal structure of, A., 686.
 diguanide complexes, A., 1487.

Chromium detection, determination, and separation:—
 detection of, by drop reaction, A., 319.
 in presence of aluminium and iron, by benzoate method, A., 187.
 detection and removal of defective deposits of, from sheet metal, B., 554.
 titration of, A., 1339.
 determination of, A., 1095.
 with perchloric acid, A., 1474.
 by liquid amalgam method, A., 1216.
 in presence of aluminium and iron, A., 838.
 by permanganate method, in chrome extracts and liquors, B., 819.
 spectrographically, in optical glass, B., 803.
 in iron alloys, B., 490.
 in cast iron and alloy steel, B., 359.
 in chrome-tanned leather, B., 1008.
 in plating baths, etc., A., 187.
 in complex salts, A., 319.
 in steel, B., 151.
 potentiometrically, B., 63.
 volumetrically, with diphenylamine, B., 64.
 in stainless steel using perchloric, phosphoric, and sulphuric acids, B., 807.
 in tungsten steel, B., 63.
 in titanium pigments, B., 69.
 separation of, from cobalt, iron, nickel, and zinc, A., 719.

Chromium minerals, optical properties of, A., 725.

Chromium ores, production of concentrates of, (P.), B., 557.
 manufacture of refractory bricks, etc., from, (P.), B., 631.

Chromones, synthesis of, A., 90.

Chromone chlorides, formation of, A., 91.

Chromone group, syntheses in, A., 1129.

Chromophores, organic, structure of, A., 1302.
 unsaturated, A., 969, 1371.

Chromosomes, fixing-mixtures for, A., 231, 882.
 chemistry of, A., 1266.

Chromosphere, oxygen lines in, A., 1437.

Chromylium salts, synthesis of, A., 1129.

Chrysanthemin from purple-husked maize, A., 796.

Chrysanthemums, effect of manures on constituents of, B., 741.
 nutrition of, B., 326.
 insecticides for, B., 778.
 leafy gall of, B., 374.
 control of eelworm in, B., 248.
 greenhouse, injury of, by sulphur, B., 374.
 control of Mexican mealybug on, B., 1013.

Chrysanthemum leucanthemum. See Marguerites.

Chrysarobin, B., 286.

Chrysene, purification of, by chromatographic adsorption, A., 204.
 measurement of thickness of transparent plates of, A., 952.
 derivatives, A., 1492.
 from coal tar, triphenylene in, A., 1358.
 carcinogenic action of, A., 382.

Chrysene, hydroxy-, manufacture of, (P.), B., 585.

Chrysophanic acid, production of, from chrysarobin, B., 286.

Chrysophenin, influence of alcohol on viscosity of sols of, A., 821.

Chrysotile, thermal analysis of, A., 1347.

Chneckwalla, properties of blood of, A., 999.

Chutney, manufacture of, B., 251.

Chymotrypsin, rennet activity of, A., 785.
 crystalline, A., 785.

Chymotrypsinogen, crystalline, A., 785.

Cibalgine, non-production of granulocytopenia with, A., 1411.

Cichlasoma jascetum, micro-incineration of red corpuscles of, A., 1516.

Cider, manufacture of, biochemistry of, B., 284.
 rôle of pectin in, B., 823.
 manufacture and composition of, B., 1065.
 control of fermentation of, B., 249.
 acids of, B., 376.
 action of, on metals, B., 249.
 clarified, B., 1017.

Cigarettes, nicotine in ends of, B., 924.
 action of cellulose filter-pads in, B., 653.
 adhesive for wrappers for, B., 1155.
 denicotinised, B., 124.

Cigarette smoke, nicotine in, B., 174.

"Ciment fondu", history of, B., 357.

Cimicifuga racemosa, constituents of rhizomes of, A., 673.

apoCinchene, constitution of, and its ethyl and methyl ethers, A., 765.

Cinchol, constitution of, and its conversion to 3-hydroxy- α -allocholan-17-one, A., 1242.

Cinchona, preparation of fluid extracts of, by fractional percolation, B., 700.
 preparations, detection of, by erythroquinine and thalleioquinine reactions, B., 653.

Cinchona alkaloids, A., 99, 1136.
 specific rotation and stereochemistry of, A., 1256.
 separation of, from their dihydro-bases, A., 366.
 from strychnine, B., 1067.
 chloroformyl derivatives, anomalous properties of, A., 366.
 in pneumonia, A., 636, 766, 996.
 modified, A., 227, 1256.

Cinchona bark, preparation and assay of preparations of, B., 700.
 alkaloid content of, B., 205.

epiquinine and **epiquinidine** in, A., 1513.

Cinchonic acids, substituted, synthesis of, A., 356.

Cinchonidine, dielectric potential of, A., 30.
 salts, specific rotation of, A., 1256.
 O-chloroformyl derivative, properties of, and its derivatives, A., 366.

Cinchonine, dielectric potential of, A., 30.
 salts, specific rotatory power of, A., 1256.
 optical crystallographic data for, A., 765.
 bromate, perchlorate, and o-chlorobenzoate, A., 765.

heteroCinehonine, and its dihydro-derivative, A., 99.

Cinchophen. See Atophan.

Cineole, molecular compounds of, with ethylphenols, mothyethylphenols, and xylenols, A., 744.
 detection of, A., 1141.

Cinnamaldehyde, oxidation of, at room temperature, A., 214.
 di- and tri-bromo-, and bromo- and chloro-nitro-phenylhydrazones, A., 344.
 chloroimine, o-, m-, and p-nitro-, A., 620.
 m-nitrobenzhydrazide, A., 743.
 N-nitroguanylimine, A., 769.
 phenylhydrazono-p-sulphonic acid, barium salt, A., 620.
 phenylhydrazono-p-sulphonpiperidine, A., 620.

cis-Cinnamaldehyde, α -chloro-, acetyl derivative of oxime of, and β -chloro-, and its derivatives, A., 1238.
 β -chloro-, oximes of, A., 1239.

Cinnam-o-hydroxamic acid, A., 484.

Cinnamic acid, and m-iodo-, preparation of esters of, A., 210.
 2-acetyl-1-naphthyl and 2-phenylacetyl-1-naphthyl esters, A., 1129.
 6-chloro-2-hydroxydiphenyl and o-hydroxydiphenyl esters, A., 1233.
 detection of, in balsams and resins, B., 684.

Cinnamic acid, m-amino-, and its hydrochloride, A., 337.
 3:4-dihydroxy-. See Caffeic acid.
 o- and p-nitro-a-amino-, α -benzoyl derivatives, A., 1385.

cis-Cinnamic acids, A., 916, 1363.

Cinnamic acid-o-arsinic acid, A., 1515.

Cinnamic-m-nitrophenylcarbamic anhydride, A., 336.

2-Cinnamidodiphenyl sulphide, 2'-nitro-, A., 1511.

Cinnamon oil, Seychelles, B., 524.

trans-Cinnamionitrile, β -chloro-, A., 1239.

2-Cinnamo-o-nitrophenylamidophenyl methyl sulphide, A., 1511.

Cinnamotriphenylmethylhydrazide, A., 78.

ω -Cinnamoyl-2-acetyl-1-naphthol, A., 1129.

α -Cinnamoyl- β -triphenylmethylhydrazine, and α - β -chloro-, and their derivatives, A., 1125.

Cinnamyl isopropenyl ether, A., 1483.
 sulphite, and its decomposition by heat, A., 63.

C-Cinnamylacetoacetic acid, ethyl ester, A., 1482.

10-Cinnamylanthrone, 1:5-dichloro-, A., 1235.

Cinnamylcarbamide, and m-iodo-, A., 210.

Cinnamylidene-4-aminoantipyrine, A., 990.

3'-Cinnamylidenaminoxanthone, A., 497.

5-Cinnamylidenecreatinine, and its picrate, A., 352.

Cinnamylidenecyanoacetic acid, ethyl ester, formation of stable and labile forms of, A., 82.

Cinnamylidenemalonic acid, methyl ester, addition of hydrogen cyanide and methyl malonate to, A., 976.

β -Cinnamylloxy- α -cinnamylcrotonic acid, ethyl ester, A., 1483.

β -Cinnamylloxycrotonic acid, ethyl ester, A., 1483.

Cinobufagin, crystal structure of, A., 921.

Cirrhosis, atophan, coproporphyrin-I in urine in, A., 887.

Citellus pygmaeus, changes in blood of, during growth, A., 372.

Citellus tridecemlineatus. See Squirrels, ground-.

- Citraconic acid**, bromocholesteryl, cholesteryl, and sitosteryl esters, A., 1493.
- Citracononitrile**, A., 737.
- structure and properties of, A., 738.
- ultra-violet absorption spectrum of, A., 563.
- Citral**, isomerides of, A., 605.
- polymerisation of, A., 739.
- m*-nitrobenzhydrazide and 2:4-dinitrophenylhydrazine, A., 743.
- N*-nitroguanylimine, A., 769.
- detection and determination of, A., 733.
- β -cycloCitral *m*-nitrobenzhydrazide and 2:4-dinitrophenylhydrazine, A., 743.
- Citric acid**, production of, B., 872; (P.), B., 348.
- from *Nicotiana rustica*, B., 1164.
- from quinic acid, A., 407.
- from wood pulp, B., 1160.
- extraction of, from tobacco and mak-horka, B., 124.
- partition of tartaric acid and, between water and isoamyl alcohol, A., 293.
- formation of chloralide of, and its derivatives, A., 329.
- alkali salts, electrodialysis of mixtures of calcium chloride with, A., 698.
- β -phenylethyl diethyl and di- β -phenylethyl ethyl esters, (P.), B., 1132.
- and its sodium salt, use of, in butter, B., 571.
- use of, in nickel determination, A., 1339.
- formation of, by fermentation, A., 124.
- by moulds, A., 1540.
- action of citricodehydrase on, A., 401.
- enzymic dehydrogenation of, A., 1023.
- decomposition of, by yeast, A., 1538.
- anticoagulant action of pyrogenic products of, A., 1519.
- anhydrous, manufacture of, (P.), B., 620.
- crystal structure of, A., 434.
- colour reaction for, A., 1516.
- detection of, A., 1259.
- determination of, as pentabromoacetone, A., 66.
- in cheese and milk, B., 204.
- in *Nicotiana rustica*, B., 1164.
- in tobacco, A., 133; B., 749, 1118.
- in wines, B., 1065.
- isoCitric acid**. See Propane- α -y-tricarboxylic acid, α -hydroxy-.
- Citricodehydrase**, action of, on citric acid, A., 401.
- Citrobacter anindolicum**, dissimilation of glucose and xylose by, A., 255.
- isoCitrolactone**, and its dimethyl ester and derivatives, A., 1352.
- Citronella oil**, B., 924, 1118.
- Java, determination in, of citronellal, B., 782.
- Citronellal**, determination of, in Java citronella oil, B., 782.
- Citronellie acid**, *p*-phenylphenacyl ester, B., 573.
- Citronellois**, isomeric, Raman spectra of, A., 865.
- Citronellyl chloride**, A., 474.
- Citronellylmalonic acid**, diethyl ester, A., 474.
- Citrullus colocynthis**, roots of, A., 420.
- Citrus brigarcidia**, extraction of petitgrain oil from, B., 1164.
- Citrus fruits**, resistance of, to pressure, B., 1011.
- colouring of, with ethylene gas, B., 378.
- changes of reducing and non-reducing sugars in, A., 1431.
- glucosides and mineral constituents of, A., 1435.
- physiological gradients in, A., 1647.
- Citrus fruits**, effect of lead arsenate insecticides on, B., 423.
- preservation of juices of, (P.), B., 252.
- storage of juices of B., 122, 427.
- preservation of juices and pulps from, B., 427.
- production of suspensions of products from, (P.), B., 5.
- alcoholic beverages from, B., 284, 1017.
- feeding value of by-products from, B., 605.
- use of wastes from, for feeding-stuffs, B., 1162.
- production of powder from, (P.), B., 205.
- borax-treated, colouring of, B., 378.
- Chinese, A., 262, 267.
- Florida, decay of, and its treatment, B., 378.
- Citrus grandis*. See Grapefruit, pink.
- Citrus leaves**, effect of deficiency or excess of iron and zinc ions on, A., 266.
- Citrus nobilis*. See Orange trees, Santra.
- Citrus trees**, fertilisers for, B., 1011.
- influence of fertilisers and lime on, B., 1158.
- role of calcium in culture of, B., 117.
- zinc sulphate as fertiliser for, B., 1011.
- effects of zinc sulphate on, in Florida, B., 1158.
- biology of soils in orchards of, B., 918.
- pH of soils for, in Florida, B., 117.
- soil fertility and bronzing of, B., 1011.
- effect of soil treatments on top growth of, B., 1158.
- copper content of leaves and fruit of, and exanthema and fumigation injury, B., 1110.
- penetration of petroleum spray oils in leaves, twigs, and fruit of, B., 199.
- resistance of scale insects on, to hydrocyanic acid, B., 168.
- control of scale insects and white flies on, in Florida, B., 423.
- melanose and stem-end rots of, B., 423.
- increasing efficacy of sulphur insecticides on, B., 423.
- sulphur dust for thrips and scales on, B., 246.
- control of termites on, B., 423.
- zinc sulphate sprays for mottle leaf of, B., 246.
- banked, control of ants and termites on, B., 1158.
- Civetone isooxime** and thioisooxime, and their derivatives, A., 869.
- Cladophora**, determination in, of chlorides, A., 1551.
- Clarification apparatus**, (P.), B., 51.
- Classifiers**, (P.), B., 3, 83, 129, 210.
- screens for, (P.), B., 882.
- centrifugal, (P.), B., 786.
- pneumatic, (P.), B., 658, 786.
- Clausena willdenovii**, furan derivatives in oil from, A., 134.
- Clay or Clays**, composition and properties of, B., 61.
- composition of, and articles therefrom, (P.), B., 631.
- geology and research on, B., 1009.
- mineralogy of, A., 603, 1220, 1346.
- treatment of, (P.), B., 950.
- purification of, (P.), B., 849.
- de-aeration of, B., 545.
- drying of, B., 803.
- effects of acids on, B., 1043.
- surface coefficient and critical water content of, during drying, B., 1142.
- shrinkage of, on drying, B., 1142.
- expansive burning of, (P.), B., 356.
- changes during firing of, B., 453.
- Clay or Clays**, influence of firing temperature on resistance to freezing of, B., 1094.
- hardening of, (P.), B., 919.
- glass phase in heating of, B., 1094.
- effects of heating of, with alkali hydroxides, B., 1043.
- moulding of, after heating, B., 591.
- influence of preheating on workability of, B., 545.
- wet tests for fineness of, B., 851.
- physical, chemical, and technical properties of, B., 674.
- temperature conductivity, moisture content, and drying of, B., 22.
- consolidation of charged particles of, A., 1072.
- constants of plastic flow of suspensions of, A., 444.
- viscosity of suspensions of, B., 630.
- resistance of, to gas penetration, B., 1044.
- dewatering of suspensions of, by spray evaporation, B., 453.
- determination of total surface area of, B., 197.
- dispersion of colloids in, B., 243.
- solutions for addition to, (P.), B., 805.
- thermodynamics of base-exchange in, A., 1075.
- properties of thin layer of water solution of, between solid surfaces, A., 1458.
- reaction of, with water and organic liquids, B., 36.
- uses of, in chemical industry, B., 61.
- cellular insulation of, for furnaces, etc., (P.), B., 902.
- firing of refractories of, with by-product coke oven gas, B., 949.
- in soils, effect of climate on, B., 964.
- Clay or Clays**, acid, Odo, water in, A., 1347.
- adsorbent, activation of, (P.), B., 754.
- bleaching, activation of, B., 990.
- china, effect of, on opacity of paper, B., 143.
- English, comparison of American kaolins and, B., 768.
- colloidal, production of, (P.), B., 455.
- capacity for ionic exchange of, A., 32, 930.
- use of, in paints and soaps, B., 913.
- separation and identification of mineral constituents of, B., 819.
- filter, furnace for burning of, (P.), B., 530.
- flint, Virginian, B., 149.
- frothed, B., 356.
- Iowa, freezing, thawing, and sodium sulphate tests on, B., 949.
- Japanese acid, detection of, with benzidine solution, B., 901.
- kaolin, loam, and, B., 565.
- micaceous and siliceous, A., 601.
- of Middlesex Co., N. Jersey, minerals in, A., 956.
- Ohio, effect of refring on sagger bodies containing, B., 406.
- red-firing, properties of, B., 630.
- potting, B., 1043.
- Razdorov, B., 725.
- Russian, treatment of oils with, B., 7.
- Vallendar, exchangeable base and viscosity of, B., 630.
- of Voronezh district, decolorisation of beeswax by, B., 958.
- Clay articles**, treatment of, before burning, (P.), B., 228.
- products, jointing of, with plasticised sulphur, B., 1143.
- mould lubricant for, (P.), B., 1095.

- Clay products**, cellular, B., 950.
 manufacture of, (P.), B., 851.
 sediments, non-linear equations in theory of consolidation of, A., 1072.
 slips, treatment of, (P.), B., 546.
 shear curves of, B., 545.
 control of, by density, B., 1142.
- Cleansing agents**, (P.), B., 733, 860.
 manufacture of, (P.), B., 59, 619, 664, 1131, 1150.
 for carpets, etc., (P.), B., 98.
 for skin, etc., (P.), B., 880.
- Clemmensen reduction**, ring rearrangement during, A., 1239.
- Clinochlore**, infra-red spectrum of, A., 145.
- Clintonite**, analysis of, A., 1220.
- Clostridium acetobutylicum***, reduction of propaldehyde and propionic acid by, A., 1029.
 fermentation by, A., 788.
- Clostridium histolyticum* and *sporogenes***, proteolytic and deaminising enzymes of, A., 407.
- Clostridium sporogenes***, oxidation of alanine and reduction of glycine by, A., 664.
 reduction of proline by, A., 537.
- Clostridium welchii***, plurality of antigens of, A., 1169.
 effect of cysteine on hæmotoxin of, A., 408.
- Cloth**, dryers for, (P.), B., 224.
 impregnation of, (P.), B., 1076.
 measurement of electrical resistance of, B., 363.
 removal of rust stains from, (P.), B., 755.
- Cloud chamber**, automatic high pressure, A., 839.
 large, A., 723.
 Wilson high-pressure, A., 598.
- Clovene**, A., 1375.
- Clovenic acid**, A., 1375.
- Clover**, response of, to treatment on acid upland soils, B., 245, 777.
 effect of ammonium salts on, in turf, A., 132.
 fertilisers for, for sheep, B., 117.
 effect of manures on nitrogen and ash contents of, B., 166.
 root nodule bacteria of, A., 787.
 effect of mildew and rust on excised leaves of, A., 269.
 mulching of soils with chaff from, B., 245.
 differentiation of strains of, by luminescence, A., 671.
 red, hard seeds and broken seedlings in, A., 671.
 nitrogen in infusions of, A., 265.
 Swedish and white, leaf-colour in breeding of, A., 548.
 sweet, influence of fertilisers on composition of, B., 166.
- Clupanodonic acid**, constitution of, A., 195.
 and its bromo-derivatives, A., 1482.
- Clupea harengus***. See Herrings.
- Clupean**, fission of, by trypsin preparations, A., 1279.
- Clupein**, A., 369.
 electrochemical properties of, A., 300.
 compounds of, with polysaccharides, A., 382.
 electrometric titration of, A., 369.
- Chymenella torquata***, effect of thiol and sulphoxide on chromosomes in cells of, A., 420.
- Coagulation**, theory of, A., 1074.
 of blood. See under Blood.
 of colloids. See under Colloids.
 oriented, A., 1201.
- Coal**, research on, B., 1122.
 classification of, A., 843, 957; B., 483.
 grading and classification of, B., 1078.
 structure of, from carbon-dioxide bearing seams, B., 611.
 relation of microscopical composition of, to chemical, coking, and by-product properties, B., 580.
 petrography and carbonisation properties of, B., 388.
 formation of, B., 435.
 theory of, B., 903.
 chemistry of, B., 435.
 geophysics of, A., 724.
 and decay of wood, B., 592.
 production of, in France, B., 533.
 extraction, cracking, and hydrogenation of, B., 835.
 treatment of, in gas producers under pressure, B., 437.
 apparatus for heat treatment of, (P.), B., 792.
 purification of, B., 291.
 separation of, (P.), B., 259.
 from coal culm, (P.), B., 439.
 from dirt, apparatus for, (P.), B., 610.
 from shale, (P.), B., 1075.
 pneumatic removal of dust from, B., 1027.
 selective flotation of, B., 611.
 reduction of sulphur and ash in, by froth flotation, B., 436.
 cleaning of, B., 211; (P.), B., 890.
 apparatus for, (P.), B., 434, 610.
 in relation to modern mining, B., 1078.
 dry-cleaning of, (P.), B., 212.
 apparatus for drying of, (P.), B., 386.
 screening apparatus for, (P.), B., 892.
 wet screening of, (P.), B., 387.
 washing of, (P.), B., 212, 393.
 apparatus for, (P.), B., 610.
 concentrating tables for, (P.), B., 661.
 regulation and conservation of water in, (P.), B., 1082.
 conditioning of water from, B., 338, 339.
 washer boxes for, (P.), B., 481, 890.
 apparatus for wet concentration of, (P.), B., 86.
 apparatus for breaking of, (P.), B., 977.
 crushers for, (P.), B., 83.
 shape and specific surface of particles of, B., 931.
 determination of caking capacity of, B., 1123.
 carbonisation of, (P.), B., 615, 661, 711.
 apparatus for, (P.), B., 935.
 Knowles oven for, B., 534.
 vertical chamber ovens for, (P.), B., 87.
 retort for, (P.), B., 87.
 vertical retorts for, (P.), B., 439.
 effects of rate of heating and maximum temperature on, B., 612.
 plastic stage in, B., 1028.
 behaviour of sulphur in, B., 580.
 determination of yield of volatile products in, B., 979.
 British Coal Distillation Co., Ltd., plant for, at Newbold, B., 339.
 assessing carbonising properties of, B., 339.
 high-temperature carbonisation of, B., 580.
 low-temperature carbonisation of, (P.), B., 615.
 by Coalite process, B., 932.
 refining of light products from, B., 53.
 coking of, B., 932; (P.), B., 9.
 apparatus for, (P.), B., 55.
 in Knowles oven, B., 755, 789.
- Coal**, and its mixtures, determination of coking properties of, by spherometric method, B., 1078.
 catalysts for low-temperature coking of, B., 1079.
 coking of mixtures of oil and, B., 789.
 semi-coking of, in laboratory rotary ovens, B., 130.
 colouring of, (P.), B., 711.
 cracking of suspensions of, in oil, (P.), B., 662, 1126.
 distillation of, (P.), B., 439, 1033.
 apparatus for, (P.), B., 485, 837, 1073.
 ovens for, (P.), B., 180.
 retorts for, (P.), B., 890.
 by-products from, (P.), B., 982.
 refining of light oils from, (P.), B., 1126.
 distillation of mixtures of oil and, B., 294.
 distillation of hydrocarbon oils and, (P.), B., 712.
 refining products of destructive distillation of, (P.), B., 87.
 destructive distillation of mixtures of oil and, (P.), B., 582.
 electrical distillation of, B., 834.
 sulphur in products of low-temperature distillation of, B., 389.
 gasification of, B., 1028.
 heating of, for carbonisation, (P.), B., 179.
 softening of, by heat, B., 932.
 hydrogenation of, B., 340; (P.), B., 260.
 destructive hydrogenation of, B., 85; (P.), B., 180, 616.
 destructive hydrogenation of oil dispersions of, (P.), B., 1082.
 pyrolysis of, B., 884.
 X-ray diffraction of, B., 931.
 infra-red photography of, A., 722.
 by-product gas from liquefaction of, B., 580.
 adsorptive properties of, B., 130.
 adsorption by, of methane, A., 706, 1457.
 relation of crystal structures of humic acid, lignin, and, A., 1451.
 colloidal dispersion of, in heavy solvents, B., 707.
 kinetics of combustion of, A., 588.
 effect of temporing on combustion of, B., 789.
 spontaneous oxidation of, B., 52, 85.
 quantity of vapours and gases evolved in thermal decomposition of, B., 131.
 chemistry of, B., 85, 435.
 ash content of, and its removal, B., 659.
 ash-correction formulæ for, B., 338.
 bitumen from, B., 53, 131, 580.
 chlorine in, and its effect on oven-chamber walls, B., 789.
 fluorine in, B., 5.
 binding of water by humic constituents of, B., 789.
 porphyrins in, A., 727, 1347.
 decomposition of sulphur compounds in, B., 534.
 action of chlorine on, mixed with titanium dioxide, A., 942.
 uses of, B., 932.
 pure, and its uses, B., 883.
 production of blast-furnace coke from, B., 659.
 retorts for production of coke, gas, and oil from, (P.), B., 87.
 liquid fuels from, for naval purposes, B., 212.
 production of gas, oil, etc., from, (P.), B., 213.
 production of motor fuels and lubricating oils from, B., 293.

- Coal, flow of gas through, B., 389.
oil distillation from, by Cannock wet-charge system, B., 131.
production of oils and tars from, in coke ovens, B., 979.
blending of, for low-temperature tar production, B., 884.
determination of weight of samples of, B., 483.
press for samples of, B., 755.
sampling of, B., 1078.
for analysis, B., 258.
sampling and analysis of, B., 258.
delivery shoots, etc., for, (P.), B., 754.
determination of autoxidisability of, B., 436.
apparatus for burning test on, (P.), B., 8.
action of zinc chloride solutions on, in float-and-sink tests, B., 436.
evaluation of, B., 533.
for steam-raising, B., 388.
assay of, for gas, coke, and by-products, B., 483.
determination in, of arsenic, B., 612.
of nitrogen, by Kjeldahl method, B., 5.
of silicon dioxide, B., 258.
- Coal, Alberta, B., 1122.
hydrogenation of, B., 789, 1079.
of Alma bed, Spruce River, W. Va., constitution and carbonisation of, B., 834.
Artem, B., 436.
Barnsley Seam, coking of, B., 339.
Barzass, origin of, A., 61.
hydrogenation of primary tar from, to produce lubricating oils, B., 790.
bituminous, composition of, B., 533.
pressure extraction of, B., 6.
dewatering of slurries of, in suction filters, B., 1078.
chemical treatment of, B., 755.
composition and properties of extracts of, B., 611.
low-temperature carbonisation of, by Carbolux process, B., 1123.
hydrogenation of, B., 340.
nomograph for thermal value of, B., 483.
relation between ignition temperature and reactivity of high-temperature coke from, B., 1123.
humic acids from, B., 534.
resins in, A., 1347.
low-temperature tar from, B., 390.
banded, petrology of, B., 258.
Indian, B., 52.
coking properties of, B., 339.
Borovich, origin of, A., 61.
bright, origin of, A., 61.
bright and dull, heating of, with alkali solutions under pressure, B., 131.
British, composition of, B., 834.
composition and uses of, B., 580.
brown, drying of, (P.), B., 485.
distillation of, and liquid fuel production, B., 1124.
distillation and coking of, B., 339.
fertilising action of, B., 325, 1109.
nitrogen absorption by, on treatment with ammonia to produce fertilisers, B., 612.
fossil resins in, A., 1347.
production of coal gas from briquettes of, B., 437.
production of town gas and "synthesis gas" from, in Kassel retort by Bublåg-Didier system, B., 756.
low-temperature tar from, B., 836.
Bogoslovsk, utilisation of, as metallurgical fuel, B., 1122.
- Coal, brown, Cheliabinsk, composition, properties, and treatment of primary tars of, B., 835.
hydrogenation of, B., 708.
primary tars of, B., 933.
German, chemistry of, B., 85.
lignitic, effect of temperature on vapour pressure of, B., 659.
Ukrainian, low-temperature carbonisation of, B., 1123.
extraction of montan wax from, B., 54.
caking and non-caking, properties of, B., 130.
non-caking, production of semi-coke and coke from, B., 130.
cannel, and durain, B., 436.
Chinese, calculation of heating values of, B., 1027.
coking, properties of, B., 52.
unsaturation of, and its reaction with bromine, B., 884.
discoloured, treatment of, (P.), B., 212.
of Don basin, phosphorus in, B., 978.
Donetz gas, gas-producer conversion of, B., 437.
fine, dewatering of, B., 1078.
fossil, conversion of plant substances into, B., 1122.
Illinois, petrology of non-calcareous underclays associated with, A., 725.
Irkutsk sapropel, origin of, A., 61.
Japanese, fusibility of ash of, B., 258.
hydrogenation of, B., 612.
Karaganda, effect of weathering on composition of, B., 291.
Kislovsk, B., 436.
coking properties of, B., 1078.
of Kovnetsk basin, structure of, A., 843.
radioactivity of, A., 956.
Lenin, low-temperature carbonisation of, B., 437.
mixed, determination of shrinkage of, B., 1079.
Moscow, composition of, B., 388.
Northumberland, microspores and classification of, B., 5.
Permian, of Belgian Congo, petrography of, A., 843.
in the Pittsburgh region, A., 724.
Polish, analysis of, by Wheeler's method, B., 130.
powdered, propagation of zone of combustion in, B., 291, 706.
combustion of, in chambers with water-cooled walls, B., 1123.
coking of, (P.), B., 890.
production of mixtures of fuel oil and, (P.), B., 55.
for engines, B., 534.
Ruhr, influence of flotation on ash of slurries of, B., 178.
Rumanian, gases from, B., 292.
from Banat, B., 5.
sapropelitic, composition of, B., 1122.
in Donetz basin, B., 1122.
smoky, from Moscow basin, B., 436.
Southern Karafuto, liquefaction of, B., 1123.
South Manchurian, pyrites nodules in, A., 1346.
of Stalino-Makceva region of Donetz basin, sulphur in, B., 932.
steam, dry-cleaning of, in South Wales, B., 389.
of Szápár, bitumen-rich, B., 436.
Tkivibulsk, low-temperature carbonisation of, B., 436.
Transcaucasian, carbonisation of, B., 979.
- Coal, Transcaucasian, low-temperature carbonisation of, B., 1123.
of the United States, B., 789.
of Vulcan deposits, Jiu valley, B., 706.
Westphalian, manurial value of ash of, B., 165.
Zorinsko-Buikovski, B., 436.
Coal ash, composition of, B., 389.
temperature-viscosity relations of, B., 211.
fusibility of, B., 258, 1027.
determination of fusion temperature of, B., 1027.
rare elements in, B., 978.
Northumberland, gallium and germanium from, A., 716.
dust, briquetting of, (P.), B., 662.
mills, etc., fired with, (P.), B., 661.
explosions of, B., 5.
detonation of, B., 835.
determination in, of fusain, B., 706.
gas. See under Gas.
mines. See under Mines.
seams, correlation of, by microspore content, B., 5.
alteration of, in vicinity of igneous intrusions, B., 931.
shale. See under Shale.
sludge, dewatering of, (P.), B., 1082.
slurries, clarification of, B., 291.
- Coating compositions, (P.), B., 278, 320, 466, 861, 1152.
manufacture of, (P.), B., 110, 230, 418, 736.
plasticisers for, (P.), B., 599.
physical properties and durability of films of, B., 598.
bactericides for, (P.), B., 466.
anti-corrosive, (P.), B., 1056.
asphaltic, (P.), B., 161, 278, 1005.
bituminous, (P.), B., 775.
production of, (P.), B., 466.
weathering of, B., 160, 366.
cellulose, permeability to moisture of, B., 914.
pigmented cellulose ester, production of, (P.), B., 367.
coloured, manufacture of, (P.), B., 367.
flexible, (P.), B., 736.
moisture- and air-proof, production of, (P.), B., 1056.
nacreous, (P.), B., 1005.
nitrocellulose, (P.), B., 161, 1152.
protection of, against light, (P.), B., 367.
protective agents for, (P.), B., 466.
oleoresinous, (P.), B., 775, 1103.
protective, testing of resistance of, to chemicals, B., 33.
rapid-drying, (P.), B., 367.
from rubber, (P.), B., 511.
manufacture of, (P.), B., 1056.
containing chlorinated rubber, (P.), B., 195.
temporary, for metal articles, etc., (P.), B., 110.
transparent, manufacture of, from casein, (P.), B., 1041.
waterproof, (P.), B., 161.
water-resistant, (P.), B., 815.
wrinkle finish, for flexible articles, (P.), B., 195.
- Cobalt, co-ordination number of, A., 431.
nuclear moment of, A., 675.
nuclear evolution of iron, nickel, and, A., 1442.
production of, from slags, etc., (P.), B., 156.
spectrum and nuclear moment of, A., 2.
and its compounds, *K*-absorption spectra of, A., 908.

- Cobalt**, Zeeman effect in are spectrum of, A., 675.
induced radioactivity of, A., 1297.
electrical resistance of, in magnetic fields, A., 18, 435.
electrodeposition of, (P.), B., 681.
electroplating with, alkaline baths for, B., 502.
electronic energy of, A., 909.
and its alloys, magnetic properties of, A., 1063.
ferromagnetic permeability of, A., 435.
paramagnetism of, in dilute solutions, A., 573.
heat evolved in α - β transition of, A., 704.
thermal expansion of, A., 918.
heat effects in transformations of, A., 922.
use of, in mordanting, B., 897.
finely-divided, preparation of, A., 941.
nickel as substitute for, in pressed hard alloys, B., 105.
- Cobalt alloys with chromium**, (P.), B., 908.
for cutting tools, (P.), B., 505.
with gold, resistance, B., 771.
with iron, for precipitation-hardening, (P.), B., 504, 998.
crystalline, magnetometer for, A., 1341.
magnetic, spectral analysis of, B., 594.
with iron and nickel, (P.), B., 235.
for sealing into glass, (P.), B., 106.
with iron, nickel, and titanium, for permanent magnets, (P.), B., 810.
with iron and tin, A., 1066.
with iron and titanium, A., 926.
with magnesium, B., 808.
with mercury and tin or zinc, A., 23.
with nickel, A., 1065.
with palladium, magnetism of, A., 291.
- Cobalt bases (cobaltamines)**, absorption spectra of, A., 10.
solubility of, in aqueous lanthanum thiocyanates, A., 26.
aquotisation reactions in, A., 587.
oxalato- and sulphato-compounds, complex, A., 1471.
aquopentamine sulphate, equilibrium of, with its sulphonic acid solution, A., 1323.
vandrates, complex, A., 1214.
complex, A., 1471.
 p_H and absorption spectra of solutions of, A., 579, 703.
double, with platinum, A., 1471.
- Aquopentaminocobaltic** sulphates, equilibria of, with their sulphuric acid solutions, A., 824.
- Cobalttetrammines**, complex, A., 594.
- Hexamminecobaltic** compounds, use of, in determination of vanadium, A., 1339.
- Purpureo-cobaltic** chloride, purification and analysis of, A., 1335.
- Cobalt compounds**, complex, A., 1091.
- Cobalt salts**, line absorption spectra of, A., 679.
magnetic properties of, A., 436.
effect of heat on magnetic susceptibility of, A., 14.
coloration of, A., 716.
colour changes of, in neutral salt solutions, A., 1051.
physiological action of, A., 781.
combined with proteins, conveyance of, to organs, A., 1276.
influence of radioactivity on localisation of, in lungs, A., 1276.
complex bivalent, A., 594.
- Cobalt arsenate**, dibasic, A., 461.
arsenide, crystal structure of, A., 920.
- Cobalt chloride**, electrolysis of, in mixtures of aqueous-ethylalcoholic solutions, A., 1086.
chlorides, emission spectra of, A., 1187.
basic, A., 716.
fluorides, magnetic susceptibilities of, A., 436.
halides, additive compounds of, A., 182.
hydroxide, autooxidation of, A., 834.
hyposulphite and sulphonylate, A., 461.
silicide, rhombic, crystal structure and composition of, A., 1194.
sulphate, reactions of solutions of, in glycerol, A., 325.
action of magnesium on solutions of, A., 52.
hydrated, dehydration of, A., 587, 1471.
sulphates, anhydrous, hydrated, and double, magnetic susceptibilities of, A., 14.
basic, A., 461.
sulphide, precipitated, composition and properties of, A., 1471.
sulphides, magnetic study of systems of, A., 1312.
equilibrium between, A., 1335.
- Cobaltic compounds**, complex, transition compound in formation of, A., 461.
- Cobaltic salts**, magnetic susceptibility of, A., 814.
- Cobalt organic compounds** containing amide and imide groups, magnetic susceptibility of, A., 923.
complex, A., 946.
- Cobaltous chloride**, compounds of, with dimethylglyoxime, A., 476.
- Cobalt detection, determination, and separation** :—
detection of, with mercury thiocyanate, A., 721.
in presence of other metals, A., 1095.
detection and determination of, in oils, B., 813.
determination of, with nitroso- β -naphthol, A., 721.
with potassium mercury iodide, A., 951.
volumetrically, A., 56.
with ferricyanide, A., 838.
in complex salts, A., 319.
in steel, B., 551.
in zinc ores and electrolytic zinc, B., 1146.
separation of, from aluminium, A., 1338.
from iron, A., 838.
from nickel, A., 951.
- Cobalt ions**, complex, in solution, A., 582.
- Cobalt ores**, containing copper, A., 190.
- Cobalt wire**, magnetisation of, A., 1309.
- Cobaltinitroso- β -naphthol**, colloidal, use of, in experiments, A., 1072.
- Coca extract**, assay of, B., 573.
- Coca leaves**, isolation of dihydroxytyropan from, A., 98.
- Cocaine**, adulteration of, B., 253.
hydrochloride, preservation of physiological activity of solutions of, A., 397.
salts, pharmacology of, A., 1155.
effect of anion in, on anaesthetic activity, A., 893.
sensitising action of, to adrenaline, A., 528.
excretion of, A., 1525.
detection and separation of, in mixtures with procaine, B., 924.
- Coccids**, effect of skim-milk, lactose, vinegar and iodine on infection by, A., 1419.
- Japanese**, A., 1398.
- Coccidioides immitis**, A., 536.
- Coccidiosis** in chickens, effect of diet on, A., 236.
- Coccomyces**, variability of cultures of, A., 786.
- Cocculus**, alkaloids of, A., 637.
- Cocculus diversifolius**. See Han-fang-chi.
- Coccollic acid**, identity of, with barbatic acid, A., 83.
- Cochenille acid**, synthesis of compounds related to, A., 748.
- Cocks**, hormone content of combs of, A., 1285.
pigmentation of ear-lobes of, A., 234.
- Cockroaches**, oxygen consumption of, after moulting, A., 652.
paralytic action of nicotine on, B., 335.
- Cocoa**, p_H of, B., 251.
determination in, of alkaloids, B., 781.
of fat and sugar, refractometrically, B., 172.
- Coconuts**, ash of husks of, as fertilisers, B., 471.
- Coconut oil**, adulteration of arachis oil with, B., 509.
attraction of *Necrobia rufipes* to, B., 691.
detection of, in butter, by Hoton's method, B., 43.
- Cocos nucifera**, cellulose and methoxyl values of fruit of, A., 549.
- Cod**, chrome-tanning of skins of, B., 916.
- Cod-liver oil**, fluorescence spectrum of, A., 12.
preparation of stable, chromatic emulsions of, A., 579.
oxidation of, B., 237.
by acidified sodium dichromate solutions, B., 365.
antioxidants for, B., 733.
extraction of vitamin-containing unsaponifiable matter from, (P.), B., 959.
storage of, B., 640.
toxicity of, in diet, A., 1529.
effect of saponification of fatty acids of, on Carr-Price reaction, A., 1177.
antirachitic value of, A., 417.
and of irradiated ergosterol, A., 1546.
vitamin potency of, B., 733.
vitamin action with ointments of, A., 129.
effect of cottonseed meal on stability of vitamin-A in, B., 476.
feeding of animals with, B., 699.
treatment of burns and wounds with salves of, A., 1150, 1271.
American, iodine in, B., 859.
sulphonated, influence of, on deterioration of leather by sulphuric acid, B., 916.
veterinary, effect of storage on colour and free fatty acid of, B., 859.
- Codeine**, and its derivatives, pharmacology of, A., 245, 780.
benzoate, *p*-bromo-, *p*-chloro-, *p*-hydroxy-, and *p*-nitro-benzoates, and salicylate, A., 505.
methosulphate, A., 366.
effect of, on respiration, A., 1018.
and its derivatives, A., 528.
testing of, B., 606.
- allo- ψ -Codeine**, reduction of, and its salts, A., 99.
- Co-enzymes**, A., 782.
base from preparations of, and its salts, A., 121, 249.
nicotinamide from preparations of, A., 400.
in biological oxidation-reduction, A., 1161.
- Coffee**, effect of cream on colour of, B., 122.
preservation of, (P.), B., 173.
pharmacology and chemistry of, A., 673.

Coffee, poisoning by. See under Poisoning. substitutes, production of, from cereals, (P.), B., 1116.
 detection in, of coal-tar dyes, B., 428.
 removal of caffeine from, B., 875.
 caffeine-containing and -free, effect of, on basal metabolism, A., 1155.
 caffeine-free, production of, (P.), B., 205.
 "fruit," fruit and hawthorn seeds for, B., 826.
 Kona, composition of berries of, B., 379.
 Madagascar, B., 44.
 roasted, origin of gas in, B., 251.
 determination in, of caffeic and chlorogenic acids, colorimetrically, B., 172.
Coffee beans, structure of cell-wall of, A., 1039.
 colour and chlorogenic acid content of, during roasting, B., 875.
 removal of caffeine from, (P.), B., 923.
Coffee plants, insecticides for, B., 472.
 control of *Antestia* on, with pyrethrum extract, B., 516.
 control of green bug on, B., 471.
Cohesion, inter-phase energies in, A., 1458.
Coir, molecular structure of, A., 1061.
Coke, formation of, B., 130.
 production of, (P.), B., 537.
 from coal, oils, pitch, tar, etc., B., 789.
 from crude oil, fuel oil, petroleum residues, etc., (P.), B., 10.
 from lignite, B., 707.
 from tar and pitch, (P.), B., 88.
 physical chemistry of, B., 130.
 blending of low-temperature coke in, B., 932.
 and gas, (P.), B., 537, 615.
 and producer gas, (P.), B., 1082.
 and semi-coke, from non-caking coal, B., 130.
 production, marketing, and utilisation of, B., 612.
 treatment of, (P.), B., 537.
 desulphurisation of, B., 6.
 reduction of sulphur content of, by use of catalysts with coal, B., 292.
 colouring of, (P.), B., 711.
 breaking of, apparatus for, (P.), B., 977.
 machines for, (P.), B., 434.
 crushers for, (P.), B., 83.
 quenching of, (P.), B., 615.
 with coke-oven effluents, B., 1079.
 side-tip waggons for, (P.), B., 1084.
 electrical conductivity of, B., 1079.
 plastometric study of, B., 437.
 combustion of, B., 659.
 effect of heating rate of coal on combustibility and reactivity of, B., 1028.
 gasification of, in rotating-hearth gas producers, B., 52.
 heating with, B., 178, 292.
 for domestic heating, B., 884.
 use of, in domestic boilers, B., 178.
 reactivity of, B., 834.
 blast-furnace, coal for, B., 659.
 testing of, B., 932.
 high-temperature, from bituminous coal, relation between ignition temperature and reactivity of, B., 1123.
 lignite, utilisation of, B., 437.
 low-temperature, from brown coal, utilisation of, B., 436.
 metallurgical, desulphurisation of, B., 292.
 permeability of, B., 131.
 peat, production and use of, B., 1079.
 semi-, production of, (P.), B., 537.
 in lumps, (P.), B., 981.
 determination in, of ash, B., 1079.
 of nitrogen, by Kjeldahl method, B., 5.

Coke ash, fusibility of, B., 1027.
Coke ovens, (P.), B., 8, 55, 661, 711, 791, 792, 1082.
 operation of, (P.), B., 9.
 thermotechnical principles of, B., 612.
 charging of, (P.), B., 615.
 heating of, (P.), B., 134, 981.
 calculation of heating system of, B., 1079.
 deterioration of brickwork in, B., 993.
 cement for repair of, during operation, B., 993.
 doors for, (P.), B., 760.
 improving thermal stability of bricks for lining of, B., 1094.
 refractories for, B., 453.
 heat regenerators for, B., 932.
 silica bricks for, B., 949.
 increasing productivity of, B., 1123.
 by-product production in, (P.), B., 981.
 drawing off distillation gases from, (P.), B., 1082.
 regenerative, (P.), B., 293, 837.
 with vertical heating flues, (P.), B., 536.
 retort, (P.), B., 430, 981.
 with two collecting mains, B., 1123.
Colchicine, effect of, on growth of tumours, A., 515.
Cold, physiological basis of sensation of, A., 520.
 common, vitamin prophylaxis against, A., 384.
Coleus blumei, effect of nutritive state on quantity of vitamin-A in leaves of, A., 1431.
Colitis, allergic factors in aetiology of, A., 1401.
Collagen, A., 771.
 combining weight of, A., 769.
 hydration of, B., 420.
 influence of reticular tissue on swelling of, A., 1522.
 amino-nitrogen in wool and, B., 764.
 action of nitrous acid on, B., 864.
 reactions of iron and chromium salts with, in chrome-iron tanning, B., 419.
 product of, (P.), B., 1009.
 use of, in lubricating, fuel, and transformer oils, etc., (P.), B., 470.
Collargol, differentiation of argyrol, electargol, protargol, and, in solution, B., 828.
Collisions, small, apparatus for registration of, A., 910.
Collodion, effect of age on viscosity of, B., 666.
 membranes. See under Membranes.
 suspensions, electrophoretic velocity of, A., 578.
Colloids, nature of, A., 932.
 researches on, A., 298.
 Rayleigh's formula for, A., 932.
 influence of moranyl compounds on structure of, A., 408.
 classification of, A., 1319.
 influence of micelle growth on properties of, A., 580.
 reciprocity theorem in optics of, A., 1075.
 ultra-filter for, A., 1071.
 mills for, B., 177; (P.), B., 833, 1074, 1075.
 electrochemistry of, A., 700.
 electrochemical behaviour and structure of, A., 298.
 electrokinetic potential and stability of, A., 1075.
 electrokinetic potential and surface charge of, in aqueous salt solutions, A., 1075.
 depolarisation of Tyndall scattering in, A., 821.

Colloids, ionic exchange and stability of, A., 932.
 electric double layer of, A., 298, 445.
 and coacervation, A., 298.
 and ionic micelles, A., 298.
 electric charge and fixation of, injected into the trachea, A., 654.
 state of aggregation of, and calculation of mol. wt., A., 1459.
 aggregation and solvation in, A., 1074.
 adsorption of, on metals and its effect on electrodeposits, A., 294.
 diffusion of, A., 444.
 osmotic pressure of, A., 774.
 thixotropy of, A., 933.
 anomalous flow of, A., 297.
 dynamics of, A., 31.
 periodic phenomena in, A., 1321.
 ternary systems of, A., 1459.
 stability of, A., 297.
 coagulation of, A., 164, 700.
 theory of, A., 164.
 velocity of, A., 297.
 reactions between, A., 1074, 1320.
 oxidising action of, A., 44.
 catalytic oxidation by, A., 830.
 oxidation and reduction reactions of, A., 1208.
 migration of, A., 821.
 characteristics of water in, A., 1320.
 effect of intravenous injections of, A., 246.
 practical applications of, B., 1163.
 and homoeopathy, A., 380.
 comparable with cytoplasm, influence of electrolytes on physicochemical properties of, A., 647.
 hydrophilic, A., 1075.
 determination of critical concentration of, A., 823.
 hydrophobic, action of electrolytes on, A., 933.
 inorganic, influence of temperature on, A., 820.
 lyophilic, A., 32, 163, 701, 821, 932, 1320.
 theory and application of, A., 445.
 complex relations in, A., 297.
 behaviour and particle size of, A., 821.
 linear adsorption and gelatinisation of, A., 698.
 lyophobic, colloidal electrolyte theory of, A., 298.
 organic, spherul- and linear, viscosity of, A., 1319.
 organic and inorganic, A., 1320.
 organosol, precipitation of, by alcohols, A., 1074.
 radio-. See Radiocolloids.
 soil. See under Soils.
Colloidal drops, dried, birefringence of, A., 581.
 electrolytes. See under Electrolytes.
 gases. See under Gases.
 gels, properties of, A., 1320.
 hydration and dehydration of, A., 701.
 morphology of chemical reactions in, A., 1321.
 rigid, structure of, A., 1320.
 thixotropic, optical anisotropy of, A., 580.
 ions, electric charge of, A., 299.
 metals. See under Metals.
 micelles, comparison of magnitudes of, and of molecules, A., 1072.
 particles, determination of size of, by X-ray and electron analysis, A., 162.
 effect of aggregation on cataphoretic velocity of, A., 1202.
 cataphoresis of, in water, A., 698.
 sols. See Colloidal solutions.

- Colloidal solutions**, preparation of, A., 700.
 by the electric discharge, A., 46, 932.
 by ultrasonic waves, A., 1073.
 depolarisation of light by, A., 1054.
 electrical properties of, A., 1202.
 electrical conductivity of, A., 1073.
 Kohlrausch-Weber theory of moving boundary in, A., 445.
 potentiometric study of formation and stability of, A., 296.
 specific inductive capacity of, A., 700.
 influence of electric field on viscosity of, A., 444.
 apparatus for determination of osmotic pressure of, A., 466.
 solubility of sparingly soluble substances in, A., 929.
 peptisation of, by isomorphous or foreign ions, A., 445.
 formation of aggregates in, A., 1074.
 precipitation of materials from, (P.), B., 532.
 bactericidal action of, A., 257.
 coacervate, A., 701.
 oriented, and their bearing on colloid-crystal formation, A., 701.
 highly-concentrated, preparation and properties of, A., 820.
 hydrophilic, viscosity of, A., 31.
 hydrophobic, effect of cathode rays on, A., 821.
 charge on, A., 443.
 specific heats and densities of, A., 163.
 non-metallic, white, dispersion of light in, A., 1318.
 state, A., 1072.
 suspensions of mineral particles, effect of flotation agents on charge of, A., 1201.
- Colon**, glucoso absorption from, A., 892.
 excretion by, A., 380.
 human, absorption and excretion in segments of, A., 1404.
- Colophony (rosin)**, extraction of, from wood chips with solvents, B., 1055.
 losses in cooking of, B., 775.
 refining of, (P.), B., 278, 321, 915.
 scattering and absorption of light in solutions of, A., 279.
 viscosity of, B., 510.
 dispersion of, in water, A., 1316.
 manufacture of emulsions of, (P.), B., 278.
 pine, acids of, A., 495.
 wood, refining of, (P.), B., 736.
 use of, in soaps, B., 277.
 in varnishes, B., 815.
 wood and gum, properties and manufacture of, B., 465.
 iodometric analysis of mixtures of fatty acids and, B., 1101.
 determination in, of total neutral and unsaponifiable matter, B., 1004.
- Colorimeters**, A., 320, 1097; B., 433; (P.), B., 363.
 standardisation of Lovibond red glasses for, A., 466.
 for stained histological sections, A., 1043.
 micro-, A., 1340.
 photo-electric, A., 1097.
 compensating, B., 1001.
 variable layer, A., 1475.
 trichromatic, A., 58.
- Colorimetry**, errors in, A., 1475.
 clinical, A., 103.
- Colostrum**, carotene and vitamin-A content of, A., 260.
 melanophoric hormone in, A., 126.
 human, iodine in, A., 106.
- Colour**, measurement of, A., 1475.
 with the leukometer, B., 785.
 photo-electrically, B., 773.
- Colour**, measurement of, spectrophotometrically, A., 1475.
 tetrachromatic theory of vision of, A., 1055.
 of liquids, determination of, (P.), B., 755.
 of solids, measurement of, B., 1121.
- Colours**, comparison of, electrically, (P.), B., 596.
 ice-, production of, (P.), B., 14, 589, 941, 985.
 action of kier-boiling on, B., 988.
 dyeing with. See under Dyeing.
 blue, production of, (P.), B., 989.
 ice- and pigment, manufacture of, (P.), B., 220, 264, 349, 763, 842, 1086.
 disazo-dyes for, (P.), B., 1086.
 pigment, production of, (P.), B., 941.
- Colour character**, perception, measurement, and reproduction of, B., 721.
- Colouring matters**, for foods, determination in, of poisonous metals, B., 1021.
 metachromatic, A., 428.
- Colpidium**, effect of organic acids and peptones on growth of, A., 1539.
- Columbo root**. See under Calumba root.
- Columbin**, acetate and derivatives of, A., 864.
d-Columbin, A., 1245.
V-Columbin, A., 864.
iso-V-Columbin, A., 864.
n- and *iso*-Columbins, and their derivatives, A., 1432.
- Combustible materials**, welding or cutting of containers for, B., 1050.
- Combustion**, theory of, A., 451.
 mechanism of, A., 451, 586.
 energy loss in, A., 1080.
 dynamic law of, B., 390.
 catalytic, at high temperatures, A., 455.
- Comenic acid** from fermentation of galactose, A., 125.
- Comets**, photochemical processes in, A., 676.
- Commelina communis**. See "Awobana."
- Comminution apparatus**, impact, (P.), B., 787.
- Comparators**, blocks for, A., 840.
 combined microphotometer, densitometer, and, A., 188.
- Compounds**, natural classification of, A., 569.
 rational classification of, A., 1057.
 conception of, A., 1058.
 formation of, in aqueous solution, A., 162.
 isomorphism of, A., 284.
 of type *AB₃*, structure of, A., 17.
 additive, influence of temperature on formation of, A., 1469.
 chain, heat of formation and stability of, A., 448.
 complex, A., 1091.
 electrolytic study of, A., 1088.
 surface energy and dissociation temperature of, A., 21.
 in which central ion is a complex cation, A., 1471.
 conjugated, and the periodic law, A., 745.
 unsaturated, additive reactions of, A., 975, 976.
 inorganic. See Inorganic compounds.
 molecular, Raman spectra of, A., 429.
 magnetic susceptibility of, in solution, A., 927.
 organic. See Organic compounds.
- Compressibility of salts**, A., 31.
 of strong electrolytes, A., 1201.
- Concanavalin-A**, hæmagglutination by, A., 1143.
- Concentration apparatus**, (P.), B., 178.
 laboratory, reduced pressure, A., 467.
 vacuum, (P.), B., 84.
- Concrete**, manufacture of, (P.), B., 632.
 aggregates for, (P.), B., 24, 675.
 use of iron blast-furnace slag in, B., 102.
 testing of materials for, (P.), B., 1097.
 cooling of, B., 1143.
 effect of cement composition on resistance to freezing and thawing of, B., 1044.
 mixers for, (P.), B., 1096.
 curing of, (P.), B., 1144.
 working properties of, B., 229.
 elasticity, plasticity, and shrinkage of, B., 229.
 resistance of, to corrosive solutions, B., 675.
 impact-resistance of, B., 592.
 effect of temperature on compressive strength of, B., 547.
 material for expansion joints for, (P.), B., 675.
 effect of calcium chloride on, B., 769.
 use of calcium chloride to impart strength to, B., 407.
 effect of cement on strength and durability of, B., 547.
 adjustment of water content of, (P.), B., 754.
 liberation of heat during hydration of, B., 102.
 influence of cement on corrosion of, by water, B., 229, 456.
 deterioration of, in alkaline and sea water, B., 592.
 coating of surfaces of, (P.), B., 456.
 colouring of, (P.), B., 593, 852, 903.
 protection and colouring of, (P.), B., 102.
 painting and preservation of, B., 150.
 impregnation of, to render it gas-tight, (P.), B., 456.
 protective and decorative coatings on floors of, B., 32.
 for roads, B., 675.
 from blast-furnace slag, effect of twenty-seven years' sea water exposure on, B., 547.
 cellular, manufacture of, (P.), B., 1045.
 high-early-strength cement, effect of temperature and humidity on, B., 852.
 hydraulic, determination of cement in, B., 726.
 light-weight, manufacture of, (P.), B., 1144.
 from blast-furnace slag, B., 726.
 porous, B., 726.
 manufacture of, (P.), B., 24.
 Portland cement, plastic flow of, B., 993.
 deterioration of, B., 805.
 pumice, thermal conductivity of, B., 1096.
 reinforced, corrosion of, in sea water, B., 631.
 1850-years-old, composition and stability of, B., 407.
 detection in, of iron, with X-rays, B., 24.
 determination of, in mixtures with mortar, B., 1096.
- Condensation**, fractional, B., 1025.
- Condensation apparatus**, fractional, A., 467.
- Condensers**, copper-zinc alloys for tubes for, (P.), B., 638.
 prevention and removal of slime in, (P.), B., 1077.
 for mixtures of vapours and non-condensing gases, B., 577.
 countercurrent, (P.), B., 1027.
 electric, (P.), B., 316, 774, 1100.
 electrolytic, (P.), B., 508, 639, 682, 812, 910, 1100.
 manufacture of, (P.), B., 415.
 of aluminium foil, (P.), B., 639.
 aluminium-electrolyte, A., 1326.

- Condensers, electrolytic, dry, (P.), B., 1100.
 unidirectional, (P.), B., 316.
 Liebig modified, A., 952.
- Conditioning apparatus, (P.), B., 531.
- isoConessimine, and cyano-, and their salts, A., 365.
- Conessine, reaction of, with cyanogen bromide, and its derivatives, A., 365.
- Confectionery, flour, determination in, of cacao-matter, B., 781.
 detection in, of butter fat, B., 874.
- Congo-red-fibrin for testing enzyme activity, A., 123.
- Conifers, anti-scorbutic from needles of, A., 546.
 Washington, leaf oils of, B., 1068.
- Coniine, identification of, microchemically, A., 1141.
- Conimine, and its derivatives, and di-cyano-, A., 365.
- Conjugated compounds. See under Compounds.
- Conserves, tinned, effect of heat and dryness on, B., 652.
 determination in, of aluminium, B., 1021.
 of nitrogen, B., 331.
- Constantan, potentiometric quantitative analysis of, B., 730.
- Constitution, and physical properties, A., 65.
 and optical activity, A., 1127.
 and infra-red spectra, A., 912.
 and external photo-electric effect, A., 147.
 relation of, to dielectric properties, A., 808.
 to heat of combustion and molecular refraction, A., 449.
 and the parachor, A., 283, 1059.
 and reactivity, A., 853, 1465.
 and taste, A., 780.
 and purgative action, A., 79.
 and antitoxic action of organic compounds, A., 1020.
- Containers, lining of, with artificial resins, (P.), B., 321.
- Convallamarin, antagonism of, to other drugs in iris epithelial cultures, A., 894.
- Convallaria, pharmacology of, A., 117.
- Converters, Bessemer, B., 309.
 fireproof linings of, B., 951.
- Convolvicine, and its picate, A., 873.
- Convolvidine, and its derivatives, A., 872.
- Convolvine, constitution of, and its nitrate, A., 872.
 pharmacology of, A., 1019.
- Convolvulus pseudocantabricus*, alkaloids of, A., 872.
- Convulsions, aetiology of, in infancy, A., 886.
- Cookersite, action of atmospheric oxygen on, B., 484.
- Cooking, tunnel oven for, (P.), B., 332.
 vessels, solubility of enamels of, B., 850.
- Cooling, application of Newton's law of, to measurement of heat, A., 57.
 of liquids, (P.), B., 1122.
 magnetic, A., 58.
 of metals, A., 290.
- Cooling apparatus, rotary, (P.), B., 1025.
 tower, (P.), B., 2, 929.
- Co-ordinates, commutation of, in new field theory, A., 912.
- Co-ordination, theory of, and its applications to organic chemistry, A., 727.
- Co-ordination numbers, even and odd, A., 15.
- Copaiba balsam, B., 1163.
- Copal, Brazilian, B., 641.
 Congo, detection of, B., 599.
 Fiji island, B., 1103.
- Copal resins. See under Resins, natural.
- Copper, production of, electrolytically, (P.), B., 270.
 from flotation concentrates, B., 1146.
 from Naukat ores, B., 807.
 from sulphide ores, (P.), B., 680.
 recovery of, from cement, (P.), B., 956.
 treatment of, before cold-working, (P.), B., 235.
 and its alloys, to prevent tarnishing, (P.), B., 106.
 purification of, (P.), B., 155, 680.
 deoxidation and purification of, (P.), B., 956.
 refining of, (P.), B., 155, 235, 314, 999.
 operation of furnaces for, B., 1146.
 basic and acid hearths in reverberatory furnaces for, B., 411.
 electrolytic refining of, using complex salts of cuprous chloride, B., 192, 413, 459.
 separation of bismuth from, (P.), B., 504.
 deoxidation of, (P.), B., 504.
 by magnesium and chromium, B., 152.
 cementation of, by aluminium, B., 361.
 converters for, (P.), B., 106.
 effect of bismuth on, B., 231.
 hardening of, (P.), B., 193.
 effect of cold-rolling on indentation hardness of, B., 231.
 heat treatment of, (P.), B., 595, 680.
 reactions in blast furnaces for, B., 678.
 melting of, for casting, (P.), B., 595.
 smelting of, (P.), B., 556.
 primitive smelting of, B., 231.
 welding of, (P.), B., 1051.
 influence of cadmium on filler metal for, B., 594.
 influence of cuprous oxide on, B., 770.
 spectrum of, A., 136.
 direct and fluorescence excitation of K-spectrum of, A., 138.
 arc spectrum of, A., 136, 908.
 infra-red arc spectrum of, A., 1045.
 K α -emission spectrum of, A., 1439.
 near ultra-violet spectrum of, A., 1291.
 absorption of cosmic rays by, A., 278, 804.
 atomic scattering of X-rays by, A., 150.
 scattering of K-rays from, by palladium, A., 272.
 electrical resistance of, at low temperatures, A., 154.
 electrodeposition of, (P.), B., 506.
 electrodeposition of foils and strips of, (P.), B., 315.
 electroplating with, concentrated cyanide baths for, B., 997.
 treatment of cyanide waste from, B., 1168.
 of iron at high current densities, B., 1050.
 electronic energy of, A., 909.
 ionisation of hydrogen over, A., 1068.
 selenium compounds in sludge at anodes of, B., 273.
 magnetism of, A., 1312.
 diamagnetism of, A., 1453.
 fusion of, with sodium carbonate and sulphur, A., 1088.
 adsorption of, from ammoniacal solutions by precipitated ferric hydroxide, A., 819, 930.
 oxide films on, A., 1469.
 and its alloys, with cathode-ray diffraction, B., 952.
 thickness of surface films of, A., 442.
 theory of alkaline solutions of, A., 1110.
 solubility of, in iron, A., 816.
- Copper, catalytic solubility of, in sulphuric acid, A., 175.
 solid solubility of, in magnesium, A., 576.
 solid solubility of cadmium in, A., 576.
 solubility of gases in, B., 27.
 precipitation of, under pressure, by organic reducing agents, A., 312, 591.
 on silver, A., 1212.
 crystals, structure of, A., 812.
 photo-electric properties of faces of, A., 556.
 relation between rate of dissolving, solvent, and lattice forces in, A., 309.
 sub-boundaries in, grown by Bridgman method, A., 1449.
 distortion of crystal lattice of, by filing, A., 433.
 energy bands in, A., 1450.
 corrosion of, in calcium chlorate solutions, B., 410.
 and its alloys with nickel, by washing and bleaching agents, B., 27.
 and its alloys, colouring of, (P.), B., 314.
 interference colours on, A., 807.
 and its alloys, brown-coloration processes for, B., 27.
 and its alloys, production of patina on, B., 411; (P.), B., 556.
 electrolytic production of polished surfaces of, B., 730.
 striations in tin coatings on, B., 996.
 concentration of gold in, B., 996.
 soldering of molybdenum to, A., 189.
 purification of smelter gas from, for sulphuric acid manufacture, B., 312.
 influence of sulphur on, B., 996.
 permanence of galvanos and stereotypes of, B., 637.
 biochemistry of, A., 643.
 deficiency of, in plants, A., 553.
 biological action of, A., 399.
 effect of feeding on, A., 1017.
 poisoning by. See under Poisoning.
 cure of depigmentation by, A., 1148.
 therapy with, in nutritional anaemia, A., 1148.
 content of, in organs, A., 883.
 in blood of horseshoe crabs, A., 643.
 in human blood, A., 509.
 rôle of, in haemoglobin regeneration, A., 380.
 excretion of, in faeces and urine, and its relation to diet, A., 235.
 content of, in teeth, A., 234.
 for bearings, (P.), B., 680.
 colloidal, sols, action of, with sulphur sols, A., 1074.
 electrolytic, adhesion of, B., 233.
 determination in, of antimony, arsenic, bismuth, lead, and tin, A., 1096.
 finely-divided, preparation of, A., 941.
 ionised, spectrum of, A., 907.
 poisoned with carbon monoxide, adsorption of hydrogen by, A., 1068.
 scrap, reworking of, B., 104.
 use of, in foundries, B., 500.
 sponge, critical voltage in electrodeposition of, B., 679.
- Copper alloys, (P.), B., 155, 414, 638, 857, 908.
 β -transformation in, A., 1314.
 annealing of, B., 500.
 colouring of, with "black pickle," B., 458.
 welding of, (P.), B., 908.
 welding rods of, (P.), B., 1051.
 metal losses in melting of, B., 952.
 annealed, directional effect in, B., 361.
 for die casting, (P.), B., 505.
 resistant to sea-water, (P.), B., 680.

Copper alloys, determination in, of lead, B., 501.
 with aluminium, A., 158; (P.), B., 1000.
 hardening of, B., 191.
 variation of thermal and electrical resistance during precipitation-hardening of, B., 729.
 intermediate phase in, B., 411.
 transformation of β -phase in, A., 291.
 dilatometric study of, B., 551.
 wires of, B., 856.
 with aluminium and nickel, wrought, B., 594.
 with beryllium, A., 926; B., 458.
 lattice distortion in, A., 816.
 precipitation-hardening and secondary structure of, A., 1449.
 with beryllium and tin, A., 1066.
 with cadmium and silver, A., 158.
 for bearings, B., 552.
 with gallium, phase diagram of, A., 22.
 with gold, A., 291, 816, 1198.
 transitions in, A., 439, 693.
 with indium, A., 22; (P.), B., 908.
 with iron, manganese, and nickel, A., 927.
 with iron and nickel, A., 926.
 electrodeposition of, A., 175.
 with lead, A., 23.
 X-ray structure of, A., 1065.
 centrifugal casting of, (P.), B., 193.
 determination of lead in, B., 272.
 with lead and sulphur, action of hydrogen sulphide on, B., 500.
 with mercury, with γ -brass structure, A., 920.
 with nickel, optical constants of, A., 1065.
 diffusion in, A., 23.
 with nickel and silicon, age-hardening of, B., 152, 952.
 with nickel, silver, tin, and zinc, ternary, conductivity of, A., 576.
 with nickel, tin, and iron, B., 27.
 with nickel and zinc, electrodeposition of, B., 554.
 with palladium, allotropy of, A., 1065.
 with platinum, electrical conductivity of, A., 923.
 with praseodymium, A., 1456.
 with rhodium, A., 440.
 with silver, X-ray structure of, A., 1198.
 Widmannstätten structure of, A., 693.
 separation of components of, (P.), B., 999.
 mixed crystals of, A., 692.
 effect of nickel on, A., 23.
 eutectic, A., 926.
 with steel, B., 728.
 with tin, manufacture of, (P.), B., 273.
 X-ray structure of, A., 1198.
 homogenising of, (P.), B., 556.
 electrodeposition of, B., 730.
 electroplating with, (P.), B., 557.
 with zinc, A., 158.
 structure of, A., 812.
 formation of, by inter-diffusion, A., 1066.
 mechanical properties of, B., 232.
 X-ray absorption of, A., 291.
 anodic dissolving of, A., 1467.
 corrosion of, B., 458.
 for condenser tubes, (P.), B., 638.
 corrosion-resistant, (P.), B., 155.
 determination in, of aluminium, B., 64.
Copper bases (*cuprammines*):—
 Copper tetramminesulphate, A., 714.
 pharmaceutical properties of, B., 923.
 Cuprammine ions, light absorption and complexity constants of, A., 824.
 Cuprammonium compounds, A., 824, 1212.

Copper bases:—
 Cupric *tetra*-bromides and -chlorides, ammine compounds of, A., 312.
 Diaquobisethylenediaminocupric salts, and their optical isomerism, A., 49.
Copper compounds, production of, for use as fungicides, (P.), B., 495.
 complex, for fungicides, (P.), B., 568.
 insoluble, as substitutes for Bordeaux mixture, B., 567.
Copper salts, oxidation-reduction on a diaphragm in electrolysis of, A., 1211.
 effect of, on sugar in blood, A., 1262.
 Copper borophosphate, A., 832.
 carbonate, basic, and green patina, A., 49.
 chlorides, effect of calcium chloride on absorption spectra of, A., 1051.
 ferrite, preparation and properties of, A., 312.
 halides, optical absorption and association of, in aqueous solution, A., 444.
 hydride, isotope effect in, A., 909.
 band spectrum of, A., 1051.
 phosphate, fungicides from, B., 567.
 Cupric salts, action of carbon monoxide on ammoniacal solutions of, A., 1332.
 Cupric ions, effect of ammonia and pyridine on mobility of, A., 37.
 Cupric chloride, oxidation-reduction potential of cuprous chloride and, in pyridine, A., 38.
 colours produced by alcohols, ethers, aldehydes, etc., in mixtures of hydrogen halides and, A., 167.
 equilibrium of, with potassium chloride and water, A., 1233.
 double salt of lithium chloride and, A., 1332.
 fluoride, magnetic susceptibility of, A., 436.
 action of water vapour on, A., 448.
 nitrate, anhydrous, decomposition pressure of, A., 1204.
 oxide, sulphatising roasting of, B., 678.
 band spectrum of, A., 1188.
 magnetic properties of mixtures of, with chromic oxide, A., 440.
 with ferric oxide, A., 158.
 sulphate, manufacture of, (P.), B., 306.
 from scrap copper, etc., (P.), B., 187.
 dehydration of, (P.), B., 991.
 electrolysis of aqueous solutions of, A., 831.
 diffusion of, A., 162.
 formation of cupric sulphide layers on solutions of, A., 1317.
 containing potassium or sodium sulphate, manufacture of, (P.), B., 948.
 basic, manufacture of, (P.), B., 226.
 hydrated, catalysis of dehydration of, A., 42.
 pentahydrate, nucleus formation on crystals of, A., 151.
 use of, in fertilisers, B., 116.
 effect of, on longevity of honey bees, A., 1413.
 determination in, of copper, B., 60.
 sulphide, effect of temperature on electrical conductivity of films of, A., 12.
 solubility of, in alkali polysulphides, A., 576.
 crystals, contact angle of, with water, A., 697.
 formation of layers of, on cupric sulphate solutions, A., 1317.
 sulphides, colloidal and precipitated, formation and composition of, A., 1073.

Copper:—
 Cuprous bromide, conductivity of systems of, with aluminium bromide in ethyl bromide, A., 449.
 chloride, production of, (P.), B., 629, 900.
 solubility of, in concentrated hydrochloric acid, A., 292.
 in alcoholic hydrochloric acid, A., 292.
 adsorption of ethylene by, A., 957.
 halides, absorption and fluorescence of, A., 681.
 additive compounds of, with phosphino, A., 49.
 oxide, production of, for pigments, (P.), B., 914.
 pure, preparation of, A., 714.
 Hall effect of, A., 287.
 effect of adsorption of gases on electrical conductivity of, A., 1055.
 photo-electric effect of, A., 1055.
 photo- and dark-conductivities of, A., 1303.
 conductivity of films of, showing interference colours, A., 1303.
 fungicidal properties of, B., 567.
 yellow, A., 1332.
 sulphide, miscibility of, with molten lead, A., 292.
Copper organic compounds, cathodic behaviour of, A., 175.
 containing amide and imide groups, magnetic susceptibility of, A., 923.
 quadricovalent, planar structure of, A., 920.
 salts, electrolysis of, A., 45.
 with 2:2'-dipyridyl, A., 167.
 with mercaptopyrimidines, (P.), B., 750.
 with pyridine, influence of temperature on formation of, A., 1469.
 Copper benzoinoxime dichloride, A., 981.
 disalicylaldoxime, A., 920.
 phthalocyanine, mol. wt. of, A., 689.
 Cupric bromates and perchlorates, complex, with primary amines, A., 591.
 Cuprous acetylide, adsorption of cuprous salts from Ilosvay's reagent in precipitation of, A., 293.
 chloride, compounds of, with thiocarbamide, A., 167.
Copper detection, determination, and separation:—
 detection of, A., 186, 837.
 by drop reaction, A., 318.
 detection of particles of, on rolled aluminium wire, B., 808.
 detection and determination of, with *p*-homosalicylaldoxime, A., 720.
 in pharmaceutical preparations, B., 45.
 determination of, argentometrically, A., 463.
 with *p*-aminodimethylanilino and potassium iodide, A., 720.
 with benzidine, A., 597, 837.
 colorimetrically, as cupric sulphide, A., 318.
 with sodium diethyl dithiocarbamate, A., 837.
 with cupferron, A., 721.
 gravimetrically, A., 1338.
 with thiolbenzthiazole, A., 1094.
 by flame coloration, A., 55.
 iodometrically, A., 318, 837, 1094, 1216.
 microchemically, A., 837.
 potentiometrically, A., 185, 720.
 with sodium sulphide, A., 597.
 with quinaldine acid, and its separation from cadmium, manganese, nickel, etc., A., 318.

- Copper detection, determination, and separation:—**
determination of, volumetrically, with potassium stannochloride, A., 186.
in alloys, by titration of its oxime, A., 187.
in foods, B., 331, 746, 1021.
in aqueous humour, A., 232.
in grape musts and wines, B., 744.
in liver and stomach preparations, A., 514.
in milk, microchemically, A., 512.
in organic compounds, A., 186.
in organic matter, A., 639.
in pharmaceutical preparations, B., 523.
in plating baths by de Haen-Low method, B., 413.
in rocks, A., 597.
in steel, B., 360.
in copper-molybdenum steels with α -benzoinoxime, B., 636.
in vegetable tanning extracts, B., 469.
in human tissues, A., 377.
and its separation from cadmium and from lead, A., 720.
determination in, of bismuth, B., 678.
of lead, B., 636.
of oxide, with X-rays, B., 272.
separation of, from nickel with alkali phosphates, A., 187.
- Copper bronze, cast, dilatometric study of, B., 1048.**
- Copper foil, electrodeposition of, (P.), B., 557.**
enamelling of, (P.), B., 1095.
- Copper ions, mobility of, in rock salt, A., 39.**
- Copper matte, conversion of, (P.), B., 999.**
recovery of selenium from, (P.), B., 227.
- Copper ores, removal of arsenic and antimony from, (P.), B., 414.**
dissolving of, B., 499.
dilution of flotation pulp of, B., 953.
leaching of, B., 499.
containing cobalt, A., 190.
containing gold and arsenic, working-up of, (P.), B., 235.
containing iron and zinc, flotation of, B., 191.
containing nickel, treatment of, at Falconbridge, B., 770.
Canadian, treatment of, B., 312.
arsenide and sulphide, extraction of metals from, (P.), B., 156.
of the Belgian Congo, A., 842.
carbonate, flotation of, (P.), B., 857.
colloidal primary, of S.E. Missouri, A., 1344.
of Kisenda, Belgian Congo, A., 1478.
of Orange Co., Vermont, A., 1101.
oxidised, collector for flotation of, (P.), B., 505.
reduction of, (P.), B., 505.
red, Cornwall, plagihedral hemihedry of, A., 1478.
sulphide, hydrometallurgy of, B., 499.
oxidation of, B., 551.
containing iron and zinc, flotation of, at Britannia, B., 770.
containing zinc, flotation of, (P.), B., 314.
Colorado, of Cananea, Mexico, A., 1478.
from Westphalia, microscopy of, A., 1220.
identification of, by X-ray powder diffraction patterns, A., 1474.
- Copper powder, production of, (P.), B., 314.**
- Copper sheet, electrolytic manufacture of, (P.), B., 858.**
apparatus for, (P.), B., 108.
oxidised, photo-potential of, A., 585.
solder-coated thin, (P.), B., 909.
- Copper strip, electrolytic manufacture of, (P.), B., 858.**
apparatus for, (P.), B., 108.
- Copper wire, production of, electrolytically, (P.), B., 1000.**
reduction of stannic oxide in, by hydrogen, B., 360.
tinning of, (P.), B., 556.
prevention of scaling-off of enamel on, B., 104.
cold-drawn, endurance limit of, under vibrational stresses, B., 499.
- Copra, attraction of *Necrobia rufipes* to, B., 691.**
- Co-precipitation, theory of, A., 26.**
- Coproporphyrin-I, in faeces and urine, A., 887.**
- Coprosterol, mechanism of formation of, A., 1407.**
precursors of, in the organism, A., 1407.
- epiCoprosterol, structure of, A., 749.**
- Corallina squamata*, seasonal variation in metabolism of, A., 1178.**
- Core oil, (P.), B., 759.**
- Coriander, Indian and foreign, analysis of, B., 282.**
- Cork, manufacture of agglomerates from, (P.), B., 309.**
- Corn, influence of fluorine in phosphatic fertilisers on germination of, B., 471.**
white and yellow, feeding value of, B., 697.
utilisation of, in diet, A., 902.
See also Maize.
- Corn syrup, Baumé-purity-moisture tables for, B., 283.**
- Corncoals, decolorising charcoal from, B., 884.**
- Cornea. See under Eyes.**
- Cornin, identity of, with verbenalin, A., 1041.**
- Corpses, detection in, of carbon monoxide, A., 398.**
- Corpus luteum, effect of, on basal exchange, A., 542.**
dependence of function of, on ovarian follicles, A., 1544.
action of extracts of, on uterus, A., 1426.
blue fluorescent substance from, A., 1145, 1265.
hormones of. See under Hormones.
constitution of ketone from, A., 215, 216.
in lower vertebrates, A., 105.
cow's and human, oestrin and progestin in, A., 791.
- Corrosion, research on, B., 154.**
indices of, B., 231.
"probability" of, A., 453.
rôle of motor-electrolytic current in, B., 231.
local element effect in, A., 173.
protection against, B., 636.
use of chlorinated rubber for, B., 468.
inhibitors for, from carbon disulphide, (P.), B., 840.
study of surfaces in tests on, A., 147.
immersion of samples in tests of, B., 311.
in liquids, B., 1048.
of metals, A., 41; B., 231, 501, 770.
measurement of, B., 272.
standard tests for, B., 635.
in relation to their polish, B., 905.
in soils, B., 191.
of metals and metallic couples, B., 231.
of wires, testing of, B., 635.
- Corrosion, by alternating-current, B., 855.**
electrolytic and galvanic, of metals, B., 1048.
marine, B., 855.
- Corsets, dyeing and finishing of cloth for, B., 800.**
- Cortico-adrenal function, theories of, A., 1421.**
- Cortin, effect of, on performance of adrenalectomised rats, A., 539.**
on hamatic glycolysis in diabetes, A., 1269.
in intra-ocular tension in glaucoma, A., 1149.
on sexual organs, A., 539.
on vagal excitability, A., 1283.
- Cortinellus shiitake*, fat of, A., 134.**
- "Cortormone" in blood of rabbits, A., 665.**
- Corundum, chrome, B., 149.**
euhedral crystals of, (P.), B., 1044.
powder, wetting power of, A., 1071.
sinter-, mineralisers for production of, B., 768.
- Corydalis aurea*, constituents of, A., 672.**
- Corydine, pharmacology of, A., 1410.**
- Corynantheic acid, A., 1513.**
- Corynanthine, A., 1513.**
toxicity and sympathetic-inhibitory action of, A., 894.
- Corynanthine, constitution of, A., 996.**
utero-adrenalinolytic activity of, A., 397.
- ψ -Corynanthine, formation of, from corynanthine, A., 365.**
- Cosmetics, manufacture of, (P.), B., 256, 288, 924, 974, 976.**
mediaeval practices in, B., 700.
silicic acid gels for, (P.), B., 355.
solidified, production of, (P.), B., 701.
sunburn, (P.), B., 1120.
sunburn cream, (P.), B., 384.
- Cosmic constants and atomic constants in the expanding universe, A., 278.**
rays. See under Rays.
- Cotarnic acid, 5-bromo-. See 2-Methoxy-3:4-methylenedioxy-5-bromophthalic acid.**
- Cotarnic acids, synthesis of, A., 213.**
- Cotarnine, condensation of, with aromatic nitroaldehydes, A., 1513.**
reactivity of aldehyde group in, A., 1388.
carbamide and thiocarbamide derivatives, and their derivatives, A., 366.
- Cotarnine, 5-bromo-, and its derivatives, A., 1513.**
- Cotarnine series, A., 366, 1388, 1513.**
- Cotarnolaetone, 5-bromo-, A., 1513.**
- Cotarnomethine, 5-bromo-, methiodide, A., 1513.**
- Cotarnone, 5-bromo-, A., 1513.**
- Cotton, manufacture of, lubricants for, B., 791.**
regional composition of, B., 444.
wetting agents in boiling of, B., 1135.
desizing of, B., 945.
improvement of, B., 800.
mercerisation of. See under Mercerisation.
swelling of, in alkali, B., 267.
cleaning of greasy sweepings of, (P.), B., 846.
fastness of azo-dyes on, B., 945.
light-fast dyes for, B., 59.
fading of vat dyes on, B., 302.
distinguishing new and secondhand upholstery fillings of, B., 896.
cuprammonium hydroxide solutions for determination of chemical damage to, B., 540.
caustic-pretreated, effect of drying on X-ray pattern of, B., 224.

- Cotton**, raw, spontaneous heating of, B., 445.
 vat-dyed, action of oxidising agents on, A., 170.
 determination of, in mixtures with asbestos, B., 718.
 in textiles, B., 1038.
 determination of rayon in mixtures with, B., 718.
- Cotton fabrics**, finishing of, (P.), B., 186, 801.
 applications of resins, viscose, etc., in, B., 224.
 pre-shrinking of, (P.), B., 303.
 permeability to hydrogen of films on, B., 303.
 oxycellulose in, bleached for dyeing, B., 1139.
 damage of, by magnesium sulphate, B., 59.
 waterproof, production of, (P.), B., 766.
- Cotton fibres**, composition and maturity of, B., 445.
 effect of fertilisers on length of, B., 918.
 effect of mercerisation on tensile strength, length, and fineness of, B., 847.
 viscosity of solutions of, B., 445.
 injury of, by salts, B., 586.
 microbiology of, B., 986.
- Cotton goods**, desizing of, with Diastafa, B., 945.
- Cotton linters**, chemical determination of degradation of, B., 1038.
- Cotton plants**, plots for field experiments with, B., 166.
 soil crusts in fields for, B., 420.
 growing of, B., 374.
 growth of, under irrigation in the Sudan, B., 73.
 on water-logged soils, B., 514.
 cultivation of, on Indore soils, B., 821.
 in the Sudan, B., 821.
 vernalisation in, A., 904.
 rotation crops for, at Barberton, S. Africa, B., 919.
 fertilisation of, in a crop-rotation system, B., 566.
 adaptation of fertilisers for, B., 918.
 fertiliser requirements of, and soil organic matter, B., 917.
 nitrogenous fertilisers for, B., 165.
 manuring of, in Egypt, B., 968.
 potash starvation of, B., 516.
 blackarm disease of, caused by *B. malvacearum*, B., 516.
 manurial control of root rot of, B., 516.
 relation of fertilisers to control of root rot of, in Texas, B., 118.
 utilisation of ammonia-nitrogen by, B., 918.
 determination of maturity of, B., 843.
 hybrids of, B., 444.
 manufacture of paper from stems of, B., 446.
 preparation of rayon pulp from stalks of, A., 1435.
- Cotton root-rot fungus**, catalase activity, age, and viability of sclerotia of, A., 798.
- Cotton rags**, strength and stability of paper from, B., 845.
- Cotton wool**, maturity of fibre in, B., 298.
 cleaning and bleaching of cotton for, B., 224.
 absorbency of, B., 57.
 cellulose from, A., 610.
 determination of purity of, B., 298.
- Cotton yarns**, effect of mercerisation on tensile strength and extensibility of, B., 847.
 dyed with sulphur-black, action of sulphur dioxide on strength of, B., 302.
- Cottonseed**, B., 275.
 cultivation of, B., 374.
 delinting of, B., 444.
 ethyl alcohol as by-product in, B., 444.
 deterioration of, in storage, B., 689.
 production of furfuraldehyde from hulls of, B., 442.
 oil content of, B., 159.
 tannins in hulls of, B., 469.
 determination of lint on, B., 1038.
- Cottonseed meal**, feeding of dairy cows with, B., 827.
 injury to pigs from, A., 396.
- Cottonseed oil**, alcohol extraction of, B., 559.
 effect of method of disintegration of seeds on, B., 911.
 influence of gossypol on colour of, B., 732.
 effect of hydrochloric acid treatment on, B., 462.
 catalytic effect of metals and alloys on change in, during storage, B., 1101.
 waste, production of gasoline from, B., 179, 887.
 laboratory tests on, B., 275.
- β -Couepic acid, and its salts, esters, and semicarbazone, A., 1350.
- Coula-seed oil**, B., 859.
- Coulomb law**, breakdown of, for hydrogen, A., 144.
- Coumarans**, amino-, analgesic and sedative action of, A., 245.
- 3:4-Coumareno-(2''':3'')-flavylium chloride**, 7-hydroxy-, A., 1130.
- Coumaric acid**, geometrical inversion of, and 5-nitro-, and their esters, A., 211.
- Coumarin**, detection and determination of, colorimetrically, A., 1435.
- Coumarin**, 8-amino-7-hydroxy-, and its 8-acetyl derivative, A., 986.
 6-chloro-7-hydroxy-, and its acetyl derivative, A., 1503.
- Coumarins**, synthesis of, by Pechmann's method, A., 1128.
 from phenols and β -ketonic esters, A., 1503.
 mercuration of, A., 768.
 geometrical inversion in acids derived from, A., 211, 757.
 natural, A., 868, 986.
isocoumarins, synthesis of, A., 980.
- Coumarin-4-acetic acid**, and its derivatives, A., 353.
- Coumarin-4-acetic acid**, 6-chloro-7-hydroxy-, A., 1504.
- (Coumarin- α -carbonyl)cinnamoylacetic acid**, ethyl ester, A., 353.
- Coumarin-3-carboxylic acid**, chloride, A., 353.
- Coumarone**, 6-hydroxy-, and its derivatives, A., 1128.
- Coumarones**, hydroxy-, synthesis of, A., 1128.
- Coumarone-1-carboxylic acid**, 5- and 6-hydroxy-, and their derivatives, A., 1128.
- Coumarone-2-[1]-carboxylic acid**, synthesis of, A., 1128.
- Coumarone-4-carboxylic acid**, 5-hydroxy-, A., 1128.
- Counters**, Greinacher hydraulic, A., 466.
 point and tube, A., 1217.
 Wynn-Williams, A., 466.
- Counting**, statistical errors in, A., 912.
- Cows**, mineral requirements of, A., 114.
 feeding value of lucerne hay injured by sulphur dioxide for, B., 1021.
 feeding of, with sugar-beet leaves and slices, B., 972.
 replacement of oil-cake protein by ammonium bicarbonate in, B., 78.
- Cows**, calcium and phosphorus assimilation by, A., 393.
 vitamin-A in nutrition of, A., 668.
 dairy, effect of varying diets on growth, lactation, and reproduction of, A., 114.
 liming of Finnish soils for fodder crops for, B., 1159.
 nutritive value of A.I.V. silage for, B., 476.
 feeding of, with cottonseed meal, B., 827.
 with lucerne hay, B., 605.
 with wood-sugar yeast, B., 122.
 effect of feeding rock phosphate on fluorine in, A., 243.
 supplementary feeding of vitamin-D preparations to, B., 522.
 distillery spent wash as supplementary feed for, B., 379.
 value of ammonium bicarbonate in nitrogen metabolism of, B., 379.
 effect of feeding-stuffs on products from, B., 1162.
 toxicosis in, due to fluorine, A., 781.
- Cowpeas**. See under Peas.
- Cozymase**, A., 782, 1278.
 temperature stability and formation of, A., 1165.
 as activator of glycolysis, A., 1278.
 pure, properties of, A., 1024.
 heat-inactivated, activation of glycolysis by, A., 1162.
- Crabs**, horseshoe, distribution of organic phosphates in muscles of, A., 511.
 blood of. See under Blood.
- Cracking**, apparatus for, (P.), B., 217, 662.
 Winkler-Koch apparatus for, B., 131.
 effect of pressure in, B., 836.
 gases from, B., 1030.
 with aluminium chloride, B., 54.
 in presence of hydrogen, B., 1030.
 vapour-phase, B., 886.
- Cramps**, heat and uramic, treatment of, with sodium chloride, A., 1401.
- Cranberries**, vitamin-C in, B., 171.
- Crasulaceae**, absence of citrates in, A., 1550.
- Crayfish**, blood of. See under Blood.
 solution of fats and fatty acids by gastric juice of, A., 653.
- Cream**, physical effects of freezing of, B., 873.
 pasteurisation and deodorisation of, (P.), B., 78.
 sterilisation of separators for, by lye and chlorine solutions, B., 873.
 fat rising in, B., 121.
 distribution of phospholipins in, B., 571.
 fermentation of proteins in, B., 1066.
 neutralisation of, for butter making, B., 874, 1161.
 treatment of, with casein, (P.), B., 748.
 for keeping, (P.), B., 523.
 preservation of, (P.), B., 972.
 preservation of composite samples of milk and, B., 1066.
 canning of, B., 1161.
 storage of, (P.), B., 204.
 artificial, composition of, B., 1019.
 production of, by emulsification of butter and milk, (P.), B., 700.
 coffee and whipping, B., 1066.
 frozen, testing of, B., 250.
 plastic, B., 250.
 detection in, of lactic acid, B., 475.
- Creatine**, electrodialysis of aqueous solutions of, A., 370.
 flavianate, A., 639.
 formation of, in the organism, A., 1530.

- Creatine**, formation and decomposition of, in stomach, A., 1152.
 synthesis of, in protein starvation, A., 242.
 effect of diet on excretion of, A., 1530.
 influence of glycine on excretion of, A., 1407.
 effect of, on carbohydrate metabolism, A., 1151.
 on frog's muscle, A., 239.
 hæmatopoietic action of phosphoric compounds of, A., 1517.
 in various parts of brain of vertebrates, A., 1520.
 ratio of, to creatinine, in hibernating and spawning frogs, A., 1530.
 in albino rats, effect of thyroid and thyroxine on, A., 900.
 determination of, A., 1390.
 microchemically, A., 1140.
 in blood, A., 103.
- Creatinephosphoric acid**, A., 1486.
 determination of, A., 1521.
- Creatinine**, electroanalysis of aqueous solutions of, A., 370.
 condensation of, with aromatic aldehydes, A., 850.
 derivatives, A., 352.
 flavianate, A., 639.
 hæmatopoietic action of phosphoric acid compounds of, A., 1517.
 synthesis of, in protein starvation, A., 242.
 measurement of clearance of, A., 242.
 in blood, A., 1000.
 influence of glycine on excretion of, A., 1407.
 renal excretion of, A., 513.
 urinary excretion of, as measure of glomerular filtration, A., 106.
 determination of, A., 654, 1390.
 microchemically, A., 1140.
 in blood, A., 103, 642.
 in blood and urine, A., 1142.
- Creatinuria** in experimental fever, A., 395.
 in adolescent males, A., 397.
- Creolin**, preparation of, B., 828.
- Creosote**, hydrogenation-cracking of, B., 341.
 preservation of wood with water emulsions of, B., 806.
 conversion of, into motor spirit, B., 660.
 wood, production of guaiacol from, B., 1028.
- Creosote oils**, refining of, (P.), B., 983.
 coal-tar, preservation of wood with, B., 852.
- Crêpes**, B., 16, 183, 221, 488.
- Crepidula fornicata**, oxidase in crystalline style of, A., 1398.
- Cresol**, testing of soap solutions of, B., 205.
 resins from condensation of, with formaldehyde, B., 1152.
- Cresol**, dinitro-, effect of, on oxidation and fermentation, A., 1533.
- o-Cresol**, nitro-, mercury derivatives of, (P.), B., 175.
 2:4-dinitro-, action of, on heart, A., 526.
 4:6-dinitro-, effect of, on respiration, A., 395.
- m-Cresol**, recovery of, from mixed phenols, (P.), B., 585.
 ultra-violet absorption spectra of mixtures of aniline and, A., 428.
 Gattermann hydroxy-aldehyde synthesis with, A., 620.
 determination of, A., 102.
- m-Cresol**, 4-bromo-6-nitro-, A., 1506.
- p-Cresol**, separation of, from m-cresol and phenol mixtures, (P.), B., 940.
- p-Cresol**, separation of, from phenols, (P.), B., 539.
 thermodynamics of mixtures of, with benzoic acid, A., 1077.
 equilibrium of, with benzoic acid, A., 35.
 alkaline-earth compounds of, A., 856.
- p-Cresol**, 3-amino-, production of, from the nitro-compound, B., 296.
 nitro-, mercury derivatives of, for bactericides, (P.), B., 1165.
- 2-nitro-**, production of, from p-toluidine, B., 56.
- Cresols**, separation of, from coal tar, B., 839.
 introduction of isobutyl groups into, A., 483.
 hydrogenation of, (P.), B., 1132.
 hydrogenation of mixtures of naphthalene and, B., 1036.
 condensation of, with acenaphthenequinone, A., 86.
 compounds of, with cincole, 3:5:3':5'-dixylylamine, and m-5-xylydine, A., 744.
 and chloro- and nitro-, mercury alkyl salts, A., 202.
 3:5-dinitrophenylurethanes, A., 207.
- Cresols**, nitro-, methylation of, A., 339.
- o- and p-Cresols**, phase diagrams of binary systems containing, A., 703.
- m- and p-Cresols**, separation of, B., 664.
- o-Cresol-a-d-galactoside**, and its tetra-acetyl derivative, A., 965.
- m-Cresol-β-d-galactoside**, and its tetra-acetate, A., 201.
- o-Cresol-a-d-glucoside**, and its tetra-acetate, and ω-bromo-, tetra-acetate, A., 69.
- β-o-Cresolglucoside 6-benzoate**. See Deoxyypopulin.
- m-Cresol-β-d-glucoside**, and its tetra-acetate, and ω-bromo-, tetraacetate, A., 201.
- m-Cresol-β-d-glucoside**, m-amino-, and its derivatives, A., 201.
- Cresolglucosides**, A., 1485.
- Cresol-lignins**, and their diacetyl derivatives, A., 84.
- Cresolphthalein**, use of, as indicator in determination of thiocyanates and halides, A., 53.
- o-Cresolsulphonophthalein**, mercury ethyl salt, A., 202.
- Cresolsulphonic acids**, methylation of, A., 339.
 glycine esters, A., 970.
- Cress-seed**, mucilage from, A., 1549.
- Cress-seed oil**, grey, constituents of, A., 1434.
- Cristobalite**, two-dimensioned crystals of, A., 1061.
 conversion of quartz into, below 1000°, B., 629.
- Critical constants** of unassociated substances, A., 1064.
- Critical state**, A., 925.
- and theory of continuity**, A., 574.
- Crops**, production of, B., 282.
 drying of, (P.), B., 692.
 electric oven for drying of samples of, B., 919.
 rotation of, and soil organic matter, B., 917.
 yield of, effect of p_H of soils on, B., 72.
 effect of previous crop on, B., 72.
 relation of, to salts in soils, B., 244.
 effect of solar ultra-violet light on harvests of, B., 1060.
 response of, to fertilisers, B., 282.
 influence of high-chlorine fertilisers on, B., 867.
- Crops**, effect of potassium fertilisers on composition of, B., 324.
 effect of magnesium deficiency on, B., 778.
 negative action of fresh manure on, B., 37.
 for green manure, B., 567.
 action of moist and dried manure on, B., 37.
 production of fats, oils, fibres, and proteins from, in Germany, B., 1157.
 injury of, by anthracene oils, B., 472.
 atomised oil sprays for control of insects in, in trucks, B., 1013.
 effect of dolomitic limestone on, B., 422.
 control of lepidopterous pests on, B., 778.
 diagnosis of non-parasitic diseases of, and potash starvation, B., 326.
 arable, nitrogenous fertilisers for, B., 777.
 fodder, intensive manuring of, B., 1110.
 mineral content of, B., 867.
 neutralisation of organic and mineral acids by, B., 922.
 leguminous, nutrient requirement and potassium deficiency of, B., 245.
 market-garden, effect of fertilisers on nitrogen contents of, B., 373.
 winter-hard, cold-resistance of, B., 1061.
- Crotalaria** seed, toxicity of, for various birds, A., 657.
- Crotalaria intermedia**, digestibility of silage of, B., 1066.
- Croton oil**, activity of substances from, A., 394.
 toxic principles of, A., 64, 219.
 analysis of, A., 64.
- Croton resin**, toxicity of, A., 527.
- Crotonaldehyde**, reaction of, with alloocimene, A., 1246.
 m-nitrobenzhydrazide, A., 743.
- Crotonic acid**, electrolysis of, A., 327.
 oxidation of, in presence of guinea-pig liver slices, A., 1407.
- Crotonic acid**, α-bromo-, ethyl ester, A., 962.
- Crotonic acids**, γ-halogeno-, esters, action of sodium ethoxide on, A., 1105.
 γ-substituted, derivatives of, A., 64.
- β-Crotono-m-chloroanilide**, p-amino-, A., 336.
- β-Crotonophenetidide**, p-amino-, A., 336.
- β-Crotonoxylidides**, p-amino-, A., 336.
- Crotonyl bromide**, isolation of, A., 1480.
 reaction of, with its magnesium derivative, A., 728.
 derivatives, application of Raman spectrograph to study of cis-trans isomerism in, A., 197.
 3:5-dinitrobenzoate, A., 479.
- Crotophorbolone**, constitution of, and its derivatives and isomeric, A., 219.
- 2-Crotylphenol**, 4-bromo-, manufacture of, (P.), B., 704.
- Crucibles**, casting of, from thorium oxide, B., 406.
 support for, A., 723.
 with porous plates, use of, in sugar determination, A., 599.
 alumina, reducing porosity of, B., 804.
 Gooch, thickness of mats for, B., 1121.
- Crusgallin**, B., 463.
- Crushers**, (P.), B., 3, 50, 338, 386, 609, 929, 977, 1026.
 for coal, coke, etc., (P.), B., 977.
 for coke, etc., (P.), B., 434.
 for stones, etc., (P.), B., 786.
 gyratory, (P.), B., 50, 1026, 1074.
 jaw, (P.), B., 3.
 yielding-jaw, (P.), B., 578.
- Crushing**, power used in, B., 481.
- Crustacea**, alkaline reserve of blood of, A., 509.

Crustacea, brachyural, alkali reserve, pH , and shell-casting of, A., 652.
 calcium in, A., 524.
 marine, antagonism of potassium and calcium towards sodium in, A., 647.
 plankton, fats of, A., 653.
Cryolite, production of, from fluorspar, B., 451.
 from superphosphate waste products, B., 723.
 melting of, B., 1043.
 electrolysis of melts of alumina and, B., 65.
 solubility of, in enamels, B., 630.
 removal of insecticidal residues of, B., 247.
 adhesives for insecticidal suspensions of, B., 822.
 artificial, production of, for electric smelting of aluminium, B., 354.
 determination in, of sodium silicofluoride, B., 21.
Cryolysis, in relation to diffusion and particle size, A., 932.
Cryoscopy, camphor as solvent in, A., 1476.
 use of indene as solvent in, A., 443.
 terpenes for use in, A., 436.
Cryptococcus fugi, occurrence of, in United States, B., 568.
 wax of, A., 646.
Cryptostegia, rubber content of, B., 778.
Cryptotoxic agents from amino-acids, A., 656.
Crystals, structure of, A., 1193.
 Fourier method for determination of, A., 150.
 determination of, with fast electrons, A., 1476.
 and electrical properties, A., 567, 1062.
 Hooke's law and, A., 151.
 analysis of, A., 150.
 X-ray analysis of, A., 1306.
 α -ray photometer for, A., 1340.
 cubic face-centred structure of, A., 17.
 lineage structure of, A., 16.
 mosaic structures of, A., 16.
 dimensions of mosaic blocks in, A., 150.
 secondary structure in, A., 16.
 model for demonstrating forms of, (P.), B., 659.
 Laue diagrams and morphology of, A., 284.
 Bitter powder patterns of, A., 1449.
 determination of lattice constants of, A., 15.
 from X-ray powder photographs, A., 598.
 lattice dynamics of, A., 686, 811, 918.
 measurement of parameters of lattice of, A., 284.
 stability of ionic lattices of, A., 19, 284.
 inverted polar lattices of, A., 918.
 frequency spectrum of polar lattice of, A., 917.
 incomplete atomic arrangement in, A., 1307.
 interatomic forces and oscillation frequencies of atoms in, A., 150.
 energy levels of electrons in, A., 1306.
 rotation of molecules in, A., 568.
 hindered rotation and molecular oscillation in, A., 1191.
 X-ray rotation diagrams of, A., 151.
 symmetry of, and molecular structure, A., 921.
 and magnetostriction, A., 813.
 symmetry and habit of, A., 150.
 classification and symbolism of, A., 811.
 colour centres in, A., 915.

Crystals, migration velocity of electron colour centres in, A., 565.
 deformations of, A., 19.
 magnetic measurement of ionic deformation in, A., 569.
 detection and evaluation of distortion in, A., 1193.
 transformations in, A., 16.
 grain charges in polymorphic transformations of, A., 1194.
 size of, A., 953.
 orientation of, studied by Weissenberg X-ray goniometer, A., 433.
 interpretation of Weissenberg photographs of, A., 918.
 determination of orientation of, under the microscope, A., 1340.
 orientations of impurities in, A., 284.
 growth of, A., 161, 811, 919.
 in relation to adsorption, A., 1059.
 anisotropy in, A., 433.
 effect of cations on, A., 293.
 and nucleus formation, A., 816.
 optical determination of elastic constants of, A., 1475.
 plasticity of, A., 19, 572, 1062.
 theory of, A., 151.
 thermal transition of, from brittleness to plasticity, A., 1311.
 strength of, A., 19, 288.
 strength and real structure of, A., 151.
 refractive index of, for cathode rays, A., 570.
 thin cell for determining, A., 1217.
 refraction and dispersion of, A., 684.
 measurement of birefringence of, A., 19.
 temperature variation of infra-red spectra of, A., 145.
 infra-red absorption spectra of, A., 428, 1444.
 spectroscopy of, with γ -rays, A., 58.
 X-ray spectra and imperfections of, A., 16.
 ultra-soft X-ray spectra of, and lattice binding forces, A., 1449.
 diffraction of electrons by, A., 153, 434.
 inner potentials of, and electron-diffraction, A., 1308.
 interference phenomenon on passage of fast electrons through, A., 1451.
 diffraction of molecular rays by, A., 140.
 diffraction of X-rays by, A., 433.
 scattering of fast electrons by, A., 1195.
 Rayleigh scattering in, A., 146, 1445.
 reflexion of cathode rays from, A., 1306.
 distribution of X-rays within, A., 685.
 effect of magnetic field on photo-electric effect in, A., 429.
 unipolar interior conductivity of, A., 809.
 surface-force theory of rectification of, A., 282.
 effect of heat, X-rays, and ultra-violet light on rectification of, A., 566.
 rectification of alternating current by, A., 682.
 galvanomagnetic phenomena in, A., 1310.
 demonstration of piezo-electricity of, A., 288.
 specific heat of, A., 573.
 from elastic data, A., 690.
 anomalous, A., 1197.
 specific heat and electronic activation in, A., 574.
 thermal disarrangement in, A., 1305.
 effect of grinding of, on vapour pressure, A., 447.
 effect of high pressures on, A., 151.
 adsorption at interfaces of, with solutions, A., 697.

Crystals, adsorption of organic compounds on surfaces of, A., 1069.
 inner absorption in, A., 16.
 interference phenomenon at faces of, A., 288.
 transmission of surface changes to interior of, A., 1069.
 equilibrium and growth forms of, A., 1059.
 removal of water of crystallisation from, (P.), B., 258.
 agitation of suspensions of, in liquids, (P.), B., 51.
 synthetic replacements in, and their aggregates, A., 725.
 F -curves for reacting phases of, A., 1059.
 acicular, chemical stability of terminal faces of, A., 1086.
 bent, distortion axis of, from Laue diagrams, A., 1194.
 binary, electron conductivity and lattice stability of, A., 1187.
 cubic, photo-elastic effect of, A., 1059.
 K-X-ray absorption spectra of elements in, A., 139.
 heat conductivity of, A., 692.
 cubic and hexagonal, X-ray absorption edges of lattices of, A., 1059.
 of cuprite type, electrostatic potential of, A., 1191.
 deformed, Laue diagrams of, A., 284.
 weakening of, by annealing, A., 1062.
 ferromagnetic, magnetometer for, A., 1341.
 finely-divided, exchange reactions of gases with, A., 714.
 heteropolar, light absorption in, A., 1310.
 parachors of, A., 1306.
 energy and elastic constants of, A., 688.
 ionic, diamagnetism of, A., 688.
 variation of dielectric constant of, with temperature, A., 567.
 rectification of, A., 915.
 liquid, swarm theory of, A., 20.
 molecular forces produced by, A., 433.
 mixed, second order transformation of, A., 439.
 neon-like, diffuse scattering of X-rays by, A., 1448.
 organic, magnetic susceptibilities of, A., 924.
 orthogonal, Laue symmetry for, A., 811.
 paramagnetic. See under Paramagnetic.
 piezo-electric. See Piezo-electric crystals.
 piezo-electrically oscillating, X-ray extinction in, A., 1059.
 plastically deformed, structure and recovery of, A., 1311.
 polar, spectrum of, A., 284.
 weakly polar, dielectric constants of, A., 430.
 real, theory of, A., 151.
 single, fluorescence X-radiation and electron diffraction of, A., 1306.
 small, measurement of optical constants of, A., 952.
 magnetic susceptibility of, A., 924.
 density of, A., 21, 467.
 thin, growth of, A., 1059.
 two-dimensional, A., 918.
 triclinic, X-ray spot and crystal plane of, A., 151.
 unsymmetrical heated, theory of molecular dispersion of light in, A., 565.
Crystal detectors. See under Detectors.
Crystal oil, viscosity of solutions of methane and propane in, B., 888.
Crystal violet, photochemical decomposition of, B., 1090.
 derivatives, absorption spectra of, A., 1052.

Crystallin, cataphoresis of, A., 377.
Crystalline materials, apparatus for treatment, washing, drying, etc., of, (P.), B., 2.
 phases, liquid and solid, distribution between, A., 577.
 plates, thin transparent, measurement of thickness of, A., 952.
 salts, inner adsorption in, A., 819.
 state, persistence of, above m.p., A., 686.
 substances, determination of, by application of Delauney's theory of, A., 1214.
Crystallisation, (P.), B., 883.
 methods of inducing, B., 530.
 fluorescence in, A., 282.
 kinetics of, A., 284.
 of melts, A., 811, 1315, 1449.
 eutectic, A., 23.
Crystallisation apparatus, (P.), B., 579, 754, 977, 1077.
 for sugar, etc., (P.), B., 1027.
Crystallography, A., 1059.
Cubebulinolide, enantiomorphism of hino-kinin and, A., 1128.
Cucumbers, fermentation of, B., 120.
 vitamin-C in, A., 1176; B., 171.
 dusts for control of beetles on, B., 1012.
Pythium damping-off of, B., 822.
Cucumber plants, symptoms of mineral deficiency in, B., 245.
Cucurbita pepo, pigmentation of ripening blossoms of, A., 1180.
Cucurbitaceae, globulins from seeds of, A., 134.
 physiological effects of *Erwinia tracheiphilia* on, A., 1181.
Culture media, A., 409.
 containing nitrogen, change in p_H of, A., 1178.
 from peptised ground-nut oil-cake, A., 409.
 from peptised soya-bean oil-cake, A., 409.
 containing *Stachys* root, A., 409.
 Czapek's, A., 1281.
Culture vessels, A., 798.
Cumene, vapour pressure of, A., 22.
 ψ -Cumene, 5-bromo-, and 5-nitro-, oxidation of, A., 1363.
 3-bromo-5-6-dinitro-, A., 1114.
Cumin essence, analysis of, B., 1164.
Cupferron, ammonium salt, use of, in analysis, A., 720.
isoCupreicine, A., 996.
isoCupreidine, and its derivatives, A., 996.
Cupreine, determination of, colorimetrically, A., 370.
apoCupreines, and their salts, A., 996.
Cuprene, adsorbent, production of, (P.), B., 13.
Cupric salts. See under Copper.
Cuprite, crystal photo-effect with, A., 430.
 photo-e.m.f. in crystals of, A., 1303.
Cuprophane, membranes of cellophane and, for dialysis and electrodialysis, A., 467.
Cuprous salts. See under Copper.
Curare, A., 655.
 alkaloids of, A., 1514.
 action of, on muscle-potassium of guinea-pigs, A., 528.
Curarine chloride, curariform activity of, A., 528.
Curie points, measurement of, at low temperatures, A., 321.
 displacement of, by tension, A., 1452.
Curie-Joliot processes, A., 803.
Currants, black, residue from, after juice extraction, B., 331.
 vitamin-C in, B., 171.
 antiscorbic action of sulphited juice of, A., 1287.

Currants, black, preserved, vitamin-C in, A., 417.
 red, metabolism during ripening of, A., 795.
 residue from juice extraction of, B., 331.
Curre-saponin, biochemical properties of, A., 895.
Cuscuta reflexa, constituents of, A., 1432, 1550.
Cuscutalin, A., 1432.
 constitution of, A., 1550.
Cuscutalin, dibromo-, dibromide, A., 1551.
Cuscutin, and its derivatives, A., 1432.
Cutting fluids, (P.), B., 346.
Cutting oils, production of, (P.), B., 1083.
 "soluble," analytical control of, B., 31.
Cyanamide, catalytic conversion of, into carbamide, A., 456.
Cyanamides, seed disinfection with, (P.), B., 328.
Cyanidin chloride, formation of, from *d*-catechin, A., 757.
 tetramethyl ether bromide, bromo-, A., 757.
 ψ -Cyanidin hexaacetate, and its derivatives, A., 867.
Cyanine dyes, A., 223, 630.
 manufacture of, (P.), B., 298, 398, 1037.
 light-filters from, B., 1119.
 photographic, manufacture of, (P.), B., 15.
 containing an isoquinoline nucleus, preparation of, A., 223.
Cyanite, origin of, A., 954.
 use of, in glass-melting crucibles, B., 1142.
Cyanogen, and its halides, physical properties of, A., 1084.
 influence of nitrogen on fluorescence of, A., 1054.
 ionisation of, by electron impact, A., 1305.
 electric moment of, A., 976.
Cyanogen compounds, action of, on mercuric iodide, A., 459.
 metallic complexes of, A., 1252.
 uses of, (P.), B., 762*.
Cyanogen bromide, use of, as volumetric standard, A., 183.
 fluoride, absorption spectrum of, A., 9.
 iodide, reaction of, with quinolines, A., 356.
Hydrocyanic acid, A., 966.
 formation of, by catalytic oxidation of ammonia-methane mixtures, A., 1329.
 in oxidation of fructose, A., 1109.
 manufacture of, (P.), B., 305.
 from ammonia and carbon monoxide, alumina catalyst for, B., 589.
 absorption spectrum of, A., 1188.
 infra-red absorption spectrum of, A., 281.
 band spectrum of, A., 428.
 rotation vibration spectrum of, A., 10.
 alkali salts, alkali-carbon briquettes for production of, (P.), B., 673.
 calcium salt, production of, (P.), B., 306.
 calcium and sodium salts, separation of, (P.), B., 270.
 cuprous and auric salts, complex anions of, A., 305.
 mercuric salt, action of, on bases, A., 944.
 complex salts of, A., 945, 1469.
 with silver nitrate, A., 944.
 compound of, with benzidine, A., 613.
 determination in, of mercury, A., 186.
 nickel salt, and its complex derivatives, A., 149.

Cyanogen:—
Hydrocyanic acid, potassium salt, pure, action of, with pure benzaldehyde, A., 938.
 action of, on mercuriammonium salts, A., 714.
 on photodynamic hæmolysis, A., 643.
 on silver, A., 1332.
 silver salt, diffraction of X-rays by crystals of, A., 1194.
 sodium salt, synthesis of, under pressure, A., 179.
 crystal structure of, A., 1060.
 effect of, on mammalian heart, A., 530.
 removal of, from gases, (P.), B., 948.
 effect of, on fruit, B., 781.
 fumigation of grain with, (P.), B., 285.
 control of red scale with, B., 327.
 toxicity of, A., 896.
 for sheep, and remedies therefor, A., 1022.
 effect of, on animal cells, shown by vital stains, A., 896.
 vapour, absorption of, through the skin, A., 657.
 resting respiration of mammalian tissue in, A., 1405.
 odorous indicators for, (P.), B., 336.
 detection of, A., 54.
 determination of, microchemically, A., 949, 1472.
 with photo-electric turbidimeter, in solutions, A., 317.
 in fumigated products, A., 928.
 determination of ammonia in solutions of, A., 53.
Cyanides, manufacture of, (P.), B., 899, 1043.
 Raman spectra, magnetic properties, and structure of, A., 681.
 ions in solutions of, A., 166.
 aëration of solutions of, (P.), B., 629.
 discharge of hydrogen and metal ions from solutions of, A., 937.
 oxygen in solutions of, B., 802.
 reaction of, with formaldehyde, A., 183.
 fumigation of tomato plants with, B., 742.
 poisoning of animals by, in industrial effluents, B., 1072.
 inhibition of respiration by, A., 1276.
 detection and separation of, A., 596.
 determination of, in water, B., 656.
Cyanic acid, and its salts, tautomerism, preparation, and reactions of, A., 851.
 absorption spectrum and dissociation energy of, A., 1299.
 ammonium salt, kinetics of conversion of, into carbamide, A., 1207.
 methylammonium salt, transformation of, into methylcarbamide, in ethyl alcohol solution, A., 1208.
Cyanates, Raman effect and constitution of, A., 851.
 determination of, with absorption indicators, A., 1093.
 in presence of cyanides, colorimetrically, A., 718.
Cyanohydrins, manufacture of, (P.), B., 1130.
Cyanomacurin, constitution of, and its derivatives, A., 985.
Cyanophyces accompanying sulphur bacteria, A., 125.
Cyanosis from compressions of mediastinum, A., 381.
Cyanuric triazide, crystal structure of, A., 286, 434, 687, 1194, 1451.
Cyclamen, cecidiosis disease of, B., 778.
Cyclamin, and its derivatives, A., 348.

- Cyclamiretin, and its derivatives, A., 348.
 Cyclane series, researches in, A., 73.
 Cyclic compounds, formation of, from open-chain molecules, A., 203.
 production of, (P.), B., 621.
 anionotropic and prototropic changes in, A., 1233.
 viscosity of solutions of, A., 740.
 with *para*-linkings, A., 974.
 nitrogenous, degradation of, by animal charcoal, A., 1380.
 polynuclear, location of ethylenic linkings in, A., 751.
 Cylinder oils, production of, in the Polmin refinery, B., 293.
 effect of heat on, B., 179.
 Grozni, oils from distillates of, B., 1031.
 waste, B., 935.
 quality of, B., 1125.
 Cymarolactone, A., 1485.
 Cymaronic acid phenylhydrazide, A., 1485.
 Cymarose, and its derivatives, A., 848.
 structure of, A., 1485.
Cymbopogon, Seychelles, oils from, B., 523.
Cymbopogon georgii, volatile constituents of, B., 1163.
 Cymene, formation of, in sulphite boiling of pulp, B., 16.
o-Cymene, 4-amino-, and its derivatives, and 4-nitro-, A., 612, 739.
p-Cymene, preparation of, A., 203.
 and its 2- and 3-halogeno-derivatives, dipole moments of, A., 684.
 mercuration of, A., 1390.
p-Cymene, iodo-, constitution of, when formed by direct iodination of cymene, A., 74.
p-Cymenedi(mercuric chloride), A., 1390.
p-Cymene-3-mercuric chloride, A., 1390.
 3-*p*-Cymylcarbinol, 3:5-dinitrobenzoate, A., 75.
 1-(3-*p*-Cymylmethyl)phenanthrene, and its complex with *s*-trinitrobenzene, A., 75.
 β-(3-*p*-Cymyl)-*α*-methylpropionic acid, A., 75.
 β-3-(*p*-Cymyl)propionic acid, A., 75.
Cynodon incompletus. See Blue couch grass.
 Cynthiaxanthin, A., 233.
Cyprinus carpio, mineral differences in blood of, according to sex, A., 1001.
 depigmentation of eggs of, A., 1528.
 Cysteic acid, oxidation of cystine to, by thallic sulphate, A., 174.
 Cysteine, reaction of, with halogenoacetic acids, A., 453.
 effect of, in hereditary hypotrichosis of rats, A., 1402.
 detection of, polarographically, A., 376.
 determination of, A., 376, 877, 1111.
 iodometrically, A., 737.
 in butyl alcohol extracts, A., 332.
l-Cysteine, heat of combustion of, A., 304.
 Cysteylglycine, ethyl ester hydriodide, A., 1110.
 Cystine, rotation of, excreted in cystinuria, A., 1401.
 oxidation of, to cysteic acid by thallic sulphate, A., 174.
 effect of, on photographic emulsions, B., 478, 878.
 in relation to vitamin-B₂, A., 1546.
 growth-stimulating properties of, A., 408.
 metabolism of. See under Metabolism.
 effect of, on metabolism, A., 113.
 in protein-deficient diet, A., 890, 1153.
 utilisation of, by growing rats, A., 1533.
 content of, in serum-proteins, A., 1001.
 determination of, A., 376, 877, 1111.
 in butyl alcohol extracts, A., 332.
 separation of, from tyrosine, A., 877.
l-Cystine, heat of combustion of, A., 304.
 solubility of, in water, A., 695.
 Cystines, precipitation of, by phospho-12-tungstic acid, A., 1356.
dl- and *l*-Cystines, oxidation and excretion of, in growing dogs, A., 242.
 oxidation of acetyl and formyl derivatives of, in the body, A., 113.
 Cystinuria, A., 775, 886, 1153.
 cystine content of hair and nails in, A., 1008.
 in two sisters, A., 515.
 Cystinyldiglycine, synthesis of, and its isolation from glutathione, A., 1486.
Cytisus caucasicus, alkaloids of, A., 1549.
 Cytochrome, occurrence of, in respiratory bacteria, A., 125.
 in higher plants and algae, A., 1040.
 Cytochrome-C, pure, A., 1277.
 action of glutathione on, A., 1538.
 yeast, action of aldehyde-dehydrogenase of milk on, A., 783.
 Cytosine, synthesis of, A., 629.
 Cytosine deoxyriboside picrate, A., 510.
- D.
- Dacrydium biforme*, diterpene alcohol from, A., 1127.
Dacrydium Colensoi, diterpene oxides from resin of, A., 351, 496.
 Daidzein, synthesis of, A., 90.
 Dairies, chemical sterilisation of equipment in, B., 1066.
 use of by-products from, as feeding-stuffs, B., 332.
 utilisation of by-products and wastes from, B., 1021.
 Dairy practice, electrokinetics in relation to, A., 647.
 Dairy products, manufacture of, in Europe, B., 1066.
 effect of feeding-stuffs for cows on, B., 1162.
 acetylmethylcarbinol and diacetyl in, B., 521.
 preservation of, (P.), B., 972.
 storage of, (P.), B., 204.
 determination of *pH* of, with the glass electrode, B., 285.
 Dakin's reaction, extension of, A., 80.
 Dakin's solution, preparation and stability of, B., 1022.
 Dammar, B., 160.
 Dandelions, herbicides for, B., 1012.
 Daphnetin-3-carboxylic acid, A., 986.
 Darwinol, identity of, with *d*-myrtenol, and its derivatives, A., 350.
 Dates, Deglet Noor, growth and composition of, A., 1547.
 Datugen, A., 905.
 Datugenin, A., 905.
Datura stramonium, daturic acid from, A., 1435.
 oil from seeds of, B., 560.
 European constituents of, grown in China, A., 905.
 Daturic acid from seeds of *Datura stramonium*, A., 1435.
 Dauricine, constitution of, A., 637.
 Deaminase, kidney, localisation of, A., 659.
 Δ⁶Decadiene-*ακ*-dicarboxylic acid, A., 1105.
 Decahydro-1:2:3:4-dibenzanthraquinone, A., 1244.
 Decahydro-1:2:3:4-dibenzanthraquinyll diacetate, A., 1244.
 Decahydro-5:6:7:8-dibenznaphthaquinyll diacetate, A., 1244.
 Decahydronaphthalene, isomerisation of, by action of aluminium chloride, A., 204.
 Raman spectra of, A., 11, 914.
 solvent power of tetralin, hexalin, methylhexalin, and, B., 1036.
 thermal decomposition of, A., 73.
 differentiation of tetrahydronaphthalene and, A., 1116.
 Decahydronaphthalene, 2:3-dihydroxy-, A., 84, 492.
cis- and *trans*-Decahydronaphthalenes, Raman spectra of, A., 1446.
trans-Decahydronaphthalene-1:1-diacetic acid, esters, A., 66.
 Decahydronaphthols, separation of, and their salts, A., 80.
 Decahydrostrychnidine I, derivatives of, A., 367.
 Decahydroxyobyrine, and its picrate, A., 367.
n-Decaldehyde *o*-tolylsemicarbazone, A., 1259.
 Decalin. See Decahydronaphthalene.
trans-β-Decalone. See *trans*-2-Ketodecahydronaphthalene.
 Decamethylenedicarboxylic acid, ethylene ester, A., 845.
 Decarboxyacetylcolumbin, A., 1432.
 Decarboxycolumbin, A., 864.
 Decarboxycolumbins, A., 1432.
 Decodilactone, *l*-hydroxy-, A., 1351.
 Decoic acid, *ω*-hydroxy-, surface pressure and potential of films of polymerides of, A., 698.
 Decolactone, *l*-hydroxy-, A., 1351.
 Decomposition, at increasing temperatures, A., 308.
 double, in absence of solvent, A., 1078.
 Decotrilactone, *l*-hydroxy-, A., 1351.
 Decyl alcohol, *κ*-bromo-, and its hydrogen sulphate, (P.), B., 1131.
 Decyl chloride, A., 474.
 nitrate, Raman effect of, A., 429.
 sulphite, and its decomposition by heat, A., 63.
 thiocyanate, A., 479.
α-Decyl-*γ*-butyrolactone, A., 474.
n-Decylguanidine hydrochloride, (P.), B., 263.
 Decylmalonic acid, diethyl ester, A., 474.
n-Decylsulphonic acid, sodium salt, A., 606.
 De-*N*-dimethylaphyllidine, and its salts, A., 227.
 De-*N*-dimethyl-*α*-phenylsamandiones, and their salts, A., 98.
 De-*N*-dimethylsamandarine, and its derivatives, A., 98.
 De-*N*-dimethylsamandarone, and its derivatives, A., 98.
 4-De-ethyldeoxyphyloerythrin methyl ester, and its salts and 4-bromo-, A., 1135.
 2-De-ethylphyloerythrin, A., 1135.
 4-De-ethylphyloerythrin, A., 1135.
 Degreasing, with solvents, B., 1003.
 Degreasing apparatus, (P.), B., 958.
 Deguelic acid, and its derivatives, A., 221.
 isoDeguelin, and its oxime, A., 221.
 Dehydrase, components of, A., 782.
 citric acid, of liver, A., 1162.
 Dehydration, influence of products on, A., 587.
 Dehydro-2-acetamido-3-naphthoic acid, A., 762.
 Dehydroandrosterone, constitution of, A., 981.
 constitution and preparation of, A., 1125.
 preparation of, from cholesterol, and its oxidation and reduction, A., 1242.
 synthesis of, A., 981.

- Dehydroandrosterone, transformation of, into Δ^4 -androsten-17-ol-3-one, A., 1370. acetate, and its semicarbazone, A., 1242. benzoate and oxime, A., 982.
- trans*-Dehydroandrosterone, preparation of, A., 1125.
- Dehydroascorbic acid, enzymic reduction of, A., 263. reduction of, by tissues, A., 669.
- 7:8-Dehydrocholesterol, and its derivatives, A., 1363.
- Dehydrocholic acid, conversion of, into β -3-hydroxy-7:12-diketocholanic acid in toads, A., 1237. fate of, in the toad, A., 749.
- Dehydrocineoles, A., 1245.
- 2:3-Dehydro-1:4-cineole-5:6-dicarboxylic anhydride. See 3:6-Oxido-3-methyl-6-*iso*-propyl- Δ^4 -tetrahydrophthalic anhydride.
- Dehydrocitral. See β - γ -Dimethyl- Δ^4 -octatrienal.
- iso*-Dehydrodeguelin, A., 221.
- Dehydrodeoxycholic acid, fate of, in the toad, A., 749.
- Dehydrodiferulic acid, A., 1237.
- Dehydrodivanillic acid, dimethyl ester, A., 1237.
- Dehydrodivanillin derivatives, A., 1497.
- Dehydroergosterol, A., 487.
- Dehydrogenase, components of, A., 1276. reversibility in system, ethyl alcohol, acetaldehyde and, A., 248. in brain in hypnosis and narcosis, A., 532. of gastro-intestinal mucosa, A., 401. of higher fatty acids, diffusion of, in organs, A., 782. lactic, of embryonic tissues, effect of radium on, A., 1414. in tumour and muscle extracts, A., 782.
- Dehydrogenation, A., 738. enzymic, acceleration of, by irradiation, A., 121.
- Dehydrohederagenin, and its derivatives, A., 1126.
- Δ^6 -Dehydroheptadecamethyleneimine, and its esters, A., 868.
- Δ^7 -Dehydrohexadecamethyleneimine, and its pierolate, A., 869.
- Dehydrohomocampophenochamic acid, ethyl ester, A., 1246.
- Dehydroliothocholic acid, semicarbazone, A., 976.
- Dehydrolumisteryl acetate, A., 1493.
- Dehydro- α -matrinidine, salts of, A., 766.
- Dehydro-metacryophyllenic acid. See 3:3-Dimethyl- Δ^4 -cyclobutene-1:2-dicarboxylic acid.
- Dehydronorepicoprosteryl acetate, A., 750.
- Dehydronorliothocholic acid. See 3-Ketonorcholanic acid.
- iso*-Dehydro-oleanolic acid, and its methyl ester and its acetyl derivative, A., 1127.
- Dehydro-oleanolactone, and its acetyl derivative, A., 1127.
- Dehydrorubene, fluorescence spectrum of, A., 1052.
- Dehydrositosteryl chloride, nitro-, A., 1493.
- Dehydrothebanans, A., 1138.
- Dehydroapotoxicarol diacetate, A., 868.
- Del Rio, *Don Andrés Manuel*, scientific work of, A., 1099.
- Demagnetisation involving high frequency, A., 839.
- Dementia *præcox*, effect of sulfosin on sugar in blood in, A., 108.
- Demethoxymatteucinol, oximes of, A., 91.
- 5-Demethylætioporphyrin, l-bromo-, A., 1135.
- 1-Demethyldeoxophylloerythrin, and its methyl ester, A., 1135.
- De-*N*-methylheliotridane, and its pierate, A., 1255.
- 3-Demethylphyloerythrin, A., 1135.
- De-*N*-methyl- β -tetrahydrodeoxycodines, A., 1138.
- Dendrites, A., 811.
- Dendrobine, and its methohydroxide and *N*-oxide and their aurichlorides, A., 764.
- Dendrobic acid, and its derivatives, A., 764.
- Dendrodoa grossularia*, carotenoids of, A., 233.
- Densipimaric acid, properties of, and its derivatives, A., 496.
- Densitometers, combined microphotometer, comparator, and, A., 188. photo-electric, A., 188. linear, A., 722.
- Density (*specific gravity*), measurement of, B., 719. micropyknometrically, A., 1218. micropyknometer for, A., 1342. by X-ray photography, (P.), B., 655. and adsorption near critical point, A., 696. ratio of temperature coefficients of surface tension and, A., 685. at critical temperature, A., 815. of gases, determination of, by effusion method, A., 1342. student's balance for, A., 723. of liquids, measurement of, A., 189. of pure liquids, A., 432. absolute and ordinary, determination of, B., 177.
- Dental alloys, B., 28; (P.), B., 107. precious-metal, (P.), B., 999, 1148*. silver-base, B., 1098.
- Dental caries, production and prevention of, A., 670. biochemistry of, A., 382. diet in relation to, A., 382. as indicator of faulty diet, A., 1148. effect of feeding with vitamins on, A., 236. in relation to vitamins, A., 382. susceptibility of rats to, A., 382.
- Dental cements, (P.), B., 951. germicidal efficiency of, A., 537.
- Dental enamel, crystal orientation in, A., 511. iron in keratin of, A., 511. determination in, of iron, A., 377.
- Dentin, constituents of, A., 1144.
- Dentistry, comminuted alloys for, (P.), B., 908. filling materials for, (P.), B., 951. gold fillings for, (P.), B., 1099. indium amalgams for, (P.), B., 858. metals and alloys in, B., 28. moulding materials for, (P.), B., 409, 727. palate plate for, (P.), B., 1098. use of plaster of Paris in, B., 631.
- Deodorants, for air, etc., (P.), B., 704.
- Deoxophylloerythrin, and its derivatives, A., 1135.
- Deoxophylloerythrin, l-bromo-, A., 1135.
- Deoxophylloerythrins, A., 1134.
- Deoxybenzoin, reduction of, at dropping mercury cathodes, A., 937. derivatives, cleavage of, A., 1240. and 2:4-dinitro-, oximes, salts of, and their transformation, A., 345.
- Deoxybutotennine. See β -3-Indolyethylidimethylamine.
- 6-Deoxy-*d*-gulonic acid. See *d*-Gulomethylonic acid.
- 6-Deoxy-*d*-gulose. See *d*-Gulomethylolose.
- dl*-Deoxynoreseroline, *p*-toluenesulphonyl derivative, A., 635.
- iso*-Deoxynoreseroline, A., 1378.
- Deoxyphæoporphyrin *a*₅, 9-hydroxy-, A., 362.
- Deoxyphyllerythroætioporphyrin, synthesis of, A., 871.
- Deoxypopulin, A., 69.
- Deoxysarsasapogenin, and its derivatives, A., 1248.
- Deoxyuric acid, A., 360.
- Deoxyvasicine, and its salts, A., 365. synthesis of, and its benzylidene derivative, A., 873.
- 5-Deoxyxylose, and its derivatives, A., 609, 1483.
- Depigmentation, treatment of, by copper, A., 1148.
- Depolarisation, convergence error in measurements of, A., 1301.
- Depressors, hyperglycæmia from section of, in dogs, A., 1010. in body-fluids of man, A., 894, 895.
- Depsides, lichen, methanolysis of, A., 977.
- Dermatitis from furs, B., 722. caused by knitted woollen goods, B., 896. in chicks in relation to lack of vitamin-B₂ and to dietary egg-white, A., 416. in rats from feeding on egg-white, A., 545.
- Dermestes valpinus*, protection of hides and skins against, B., 1007.
- Derris*, toxicity of, B., 576. preparations from, B., 1117. insecticides from, B., 247. determination in, of rotenone, B., 380, 973.
- Derris* powder, treatment of, to increase stability, B., 517.
- Derris* resin, constituents of, B., 381.
- Derris* root, non-crystalline constituents of, A., 92. production of extracts of, (P.), B., 969. determination in, of rotenone, B., 573, 606.
- Desiccators, micro-, vacuum, A., 1476. heated, A., 467.
- Desyl chloride, reaction of, with Grignard reagents, A., 84.
- Desylpyridinium bromide, A., 988.
- Desylpyridiniumenol-betaine, A., 988.
- Desylquinolinium bromide, A., 988.
- Desylisoquinolinium bromide, A., 988.
- Desylisoquinoliniumenol-betaine, A., 988.
- Desylthiolacetic acid, and its derivatives, A., 1237.
- o*-Desylthiolbenzoic acid, A., 1237.
- Detectors, crystal, A., 429.
- Detergents, (P.), B., 194, 449. manufacture of, (P.), B., 14, 348, 416, 619, 620, 664, 974. from fat of *Actinodaphne Hookeri*, B., 30. from pyrophosphoric acid, (P.), B., 92. properties of solutions of, A., 1458. colloid chemistry of, B., 508, 774. colloidal electrolytes as, B., 296. sodium sesquisulfate as, B., 462. reactions between textile fabrics and, in washing, B., 765. for fabrics, (P.), B., 898. for cleaning metals, (P.), B., 1102. for textiles, comparison of fatty acid condensation products and fatty alcohol sulphonates as, B., 1090. for textiles, etc., (P.), B., 303. germicidal, B., 976. manufacture of, (P.), B., 641. solid, (P.), B., 543. moulding of, (P.), B., 187. synthetic, B., 264.

Detonation, thermodynamic theory of, A., 1206.

Detonators, blasting, shock waves and explosion products of, B., 479.

Deuteracetylene, infra-red spectra of, A., 10, 1300.

 deformation frequency of, A., 806.

 vibrational frequency of, A., 1448.

Deuterides, isotope effect in band spectra of hydrides and, A., 676.

Deuterium (*heavy hydrogen*), A., 274, 1185.

 and its compounds, A., 1332.

 and its oxide, A., 832.

 atoms, exchange reactions with, A., 713, 1087.

 recombination of, A., 827.

 atomic mass of, A., 677.

 isotope H^3 in, A., 1448.

 transmutation of, A., 678.

 molecular diameter of, A., 432.

 in natural water, A., 841.

 content of, in light water, A., 1087.

 in water of crystallisation, A., 48.

 preparation of, electrolytically, A., 456, 1467.

 concentration of, in water from cellulose, A., 1469.

 in industrial water, A., 44.

 laboratory apparatus for electrolytic concentration of, A., 466.

 spectrum of, A., 135.

 band spectrum of, A., 1437.

 infra-red absorption spectrum of water containing protium and, A., 1300.

 Raman spectrum of, A., 681, 1445.

 extreme ultra-violet spectrum of, A., 1298.

 collisions of α -particles in, A., 910.

 thermal conductivity of, A., 691.

 thermodynamic properties of, A., 925.

 coefficient of expansion of, A., 1064.

 vapour pressure of, A., 1454.

 time variation of vapour pressure of mixtures of, with hydrogen, A., 1456.

 adsorption of, on nickel, A., 27.

 adsorption of hydrogen and, by chromic oxide, A., 27.

 diffusion of, in metals, A., 1315.

 and hydrogen in palladium, A., 1200.

 equilibrium of, with water, A., 33.

 exchange between hydrogen and, on catalytic iron, A., 710.

 adsorbed in solids, A., 710.

 exchange of, between hydrogen and ammonia, A., 1460.

 catalytic exchange of hydrogen and, in methane, A., 588.

 catalytic exchange between water and, A., 1085.

 catalysis by enzymes of exchange of, with hydrogen in water, A., 1084.

 wave mechanics of reactions of hydrogen and, A., 306.

 hydrogenation of ethylene by, A., 175, 1329.

 combination of, and of hydrogen, with ethylene, A., 938.

 reaction of, with bromine, A., 39.

 with methane under influence of excited mercury, A., 457.

 with oxygen, A., 39, 709.

 under α -rays, A., 944.

 photochemical reactions of hydrogen and, with oxygen, A., 46.

 direct introduction of, into benzene, A., 74.

 stability of, A., 1295.

 introduction of, into algae, A., 132.

 into growing organisms, A., 661.

 as indicator in intermediary metabolism, A., 1407.

 condensed, properties of, A., 155.

Deuterium compounds, infra-red rotation vibration spectra of, A., 10.

 Raman spectra of, A., 806.

Deuterium bromide, physical properties of hydrobromic acid and, A., 1313.

 chloride, conductivity of mixtures of, with hydrogen chloride in water containing deuterium oxide, A., 1078.

 rate of reaction of, with sodium atoms, A., 1327.

 hydride, formation of, on nickel, A., 710.

 Raman spectrum of, A., 1445.

 vibration and rotation spectrum of, A., 1437.

 rotational molecular heat of, A., 573.

 hydroxide, diffusion of, into water, A., 1313.

 iodide, physical properties of, and of hydrogen iodide, A., 1064.

 photo-oxidation of, A., 1468.

 oxide (*heavy water*), concentration of isotopes in, A., 1448.

 isotopic exchange between acetylene and, A., 713.

 loss of velocity of neutrons in, A., 678.

 occurrence of, in beet-sugar industry, B., 75.

 in mineral water, A., 841.

 in mineral water of Czechoslovakia, A., 953.

 occurrence of, in water of crystallisation of minerals, A., 1477.

 in chemistry, A., 189.

 preparation of, A., 311.

 production of, A., 1467.

 plant for, A., 723.

 electrolytic production of, A., 831.

 separation of, from water by fractional freezing, A., 48.

 concentration of, A., 44.

 in ice, A., 953.

 zero point energy and physical properties of water and, A., 432.

 refractive index of, A., 810.

 refractive index and dispersion of, and water, A., 13.

 infra-red absorption spectrum of, A., 1053.

 band spectrum of, A., 144.

 spectrum of electrodeless discharge in, A., 280.

 Raman spectrum of, A., 1301, 1445.

 depolarisation of light scattered by, A., 1301.

 dipole moment of, A., 148.

 overpotential in, A., 1079.

 electrolytic dissociation of, A., 1076.

 dielectric properties of, A., 808.

 diamagnetic properties of, A., 923.

 diamagnetism of water and, A., 435.

 Verdet constant of, A., 148.

 thermal properties of, A., 1198.

 heats of dilution and of vaporisation of mixtures of, with water, A., 935.

 latent heat of fusion of, A., 167.

 specific heats of, A., 1454.

 critical temperature of, A., 691.

 f.p. of, as function of pressure, A., 815.

 m.p. and transition curves of ice from, A., 302.

 density of, A., 1313.

 mixtures of water vapour and, A., 694.

 critical data on mixtures of water and, A., 1456.

 pressure-volume-temperature relations of water and, A., 1454.

 latent heat of fusion of equilibrium mixtures of water and, A., 704.

 formation of drops in supersaturated vapour of, A., 1314.

Deuterium oxide, viscosity of mixtures of, with water, A., 1078.

 surface tension of, A., 1059.

 diffusion of, into water, A., 25, 1313.

 distillation and rectification of dilute solutions of, B., 609.

 mutual solubility of organic liquids and, A., 1314, 1457.

 association of, in dioxan solutions, A., 931.

 velocity of crystallisation of ice from water and, A., 439.

 conductivity of strong acids in mixtures of, with water, A., 1324.

 effect of, on ester hydrolysis, A., 829.

 swelling of gelatin in, A., 164.

 effect of water containing, on metal ammoniates, A., 1332.

 reaction of, with acetone, A., 1328.

 with amines, A., 965.

 electrochemical cell for use with, A., 1218.

 use of dropping mercury cathodes with, A., 1208.

 calorimetry with, A., 584.

 use of, in determination of hydroxyl and carbonyl, A., 717.

 in biology, A., 1551.

 chemical basis for biological action of, A., 657.

 effect of, on algae and on enzyme action, A., 657.

 on rate of photosynthesis, A., 1177.

 on plants, A., 795.

 on germination of pollen, A., 552.

 on respiration of germinating seeds, A., 552.

 enzymic fission of salicin in, A., 588.

 in the body, A., 243.

 apparatus for studies with, in small animals, A., 1551.

 action of, on reviving animals, A., 531.

 effect of, on cancer, A., 381, 382.

 on mammalian metabolism, A., 1403.

 concentration of, in the human organism, A., 1396.

 peroxide, iodine-ion catalysis of decomposition of, A., 939.

Deuterium organic compounds, preparation of, A., 731.

 Deuterium cyanide, infra-red absorption spectra of, A., 1300.

Deuterium determination—

 determination of, by means of the mass-spectrograph, A., 1335.

 by thermal conductivity, A., 462.

o-Deuterium, rotational heat of, A., 924.

Deuterium ions, hydration of, in heavy water, A., 824.

Deutero-acids, dissociation of, A., 824.

Deuteroaetioporphyrin II, and bromo-, A., 1135.

Deuteroaetioporphyrin V, and *mono*- and *di*-bromo-, A., 633.

Deuterobenzenes, Raman spectra of, A., 806, 914.

Deuteriochloroform, Raman spectrum of, A., 146, 1053.

Deuterohydroxyl, emission band spectrum of, A., 1443.

Deutero-methyl alcohol, Raman spectrum of, A., 146.

Deuterons. See Deutons.

Deutons, field of, A., 560.

 magnetic moment of, in relation to that of protons, A., 560.

 neutrons from, A., 276.

 theory of instability of, A., 1442.

 disintegration of, by impact, A., 910.

 transmutation function for, A., 1296.

- Deutons, emission of α -particles from targets bombarded by, A., 141.
 emission of protons from targets bombarded by, A., 142.
 production of artificial radioactivity by bombardment with, A., 1441.
 disintegration of beryllium by, A., 1297.
 disintegration of boron by, A., 1442.
 γ -rays from carbon bombarded by, A., 1442.
 bombardment of nitrogen by, A., 559.
 high-energy, emission of protons and neutrons from targets bombarded by, A., 1296.
 Dew, formation of, A., 818.
 Dewberries, control of anthracnose in, by spraying, B., 247.
 Dextrin, compounds of, with muscle-proteins, A., 882.
 three-component simplexes with, A., 1523.
 Dextrins, Schardinger's, from starch, A., 848.
 starch, constitution and chain-length of, A., 1226.
 Dextrino-guanidine, A., 882.
 Dextrose (*D-glucose*), configuration of, A., 1354.
 oxidation of, with bromine, A., 1107.
 formation of *D*-galactose and *L*-gulose from, A., 329.
 2:3:4:6-tetraacetate, 1-cyano-, A., 69.
 diphenylhydrazone, A., 849.
 ethyl mercaptal, tritylation of, A., 199.
 2:3:4:5-tetrabenzoate 6-triphenylmethyl ether, A., 734.
 Diabase, specific volume of, at high temperatures, A., 1313.
 Keweenaw, in relation to silver minerals, A., 725.
 Diabetes (*glycosuria*), production of acetoacetic acid and β -hydroxybutyric acid in, A., 382.
 treatment of acidosis in, with sodium lactate, A., 1527.
 blood-carotene level in, A., 382.
 carbon monoxide in blood in, A., 774.
 carbohydrate- and fat-controlling hormones in blood in, A., 411.
 blood-potassium in, A., 236, 516.
 fermentability of blood-sugar in, A., 1001.
 effect of exercise on blood-sugar in, A., 382, 886.
 carbohydrate metabolism in, A., 518.
 metabolism of carbohydrates, oxalic acid, and uric acid in, A., 1008.
 excretion of creatinine and glucose in, A., 515.
 fat metabolism in, A., 382.
 glucose excretion after exercise in, A., 383.
 action of parathormone on glycaemia in, A., 1269.
 hæmatic glycolysis in, A., 1269.
 glucose and lactate usage of heart in, A., 1269.
 action of insulin on mammalian heart in, A., 127.
 sugar consumption by surviving heart in, A., 383.
 action of hexose diphosphate and phosphates in, A., 107.
 hyperpyrexia in, A., 516.
 and hyperthyroidism, A., 649.
 hypoglycaemia in, A., 1008.
 hypoglycæmic action of testicular extracts in, A., 641.
 effect of adrenaline on alimentary lipæmia of, A., 107.
 oxalic acid metabolism in, A., 386.
 change in intermediary protein metabolism in liver in, A., 615.
 Diabetes, relation of silicon in pancreas and liver to, A., 108.
 changes in protein-bound sugar in, after ingestion of glucose and insulin, A., 515.
 bakery products for diets in, (P.), B., 1116.
 blueberries in treatment of, A., 516.
 use of insulin in divided doses in, A., 1285.
 action of lupanine and of *Lupinus albus* infusions on, A., 27.
 influence of pituitary in, A., 515.
 effect of irradiation of pituitary in, A., 1148.
 effect of spleen extracts in, A., 515.
 chemistry of cataract in, A., 1269.
 neuropathy in, A., 515.
 alimentary, influence of ovariectomy and bile acids on, A., 526.
 in children, blood-cholesterol in, A., 382.
 experimental, lipins of skin in, A., 382.
 residual nitrogen in liver in, A., 382.
 pancreatic, in frogs deprived of sympathetic nervous system, A., 1526.
 effect of œstrin on, in monkeys, A., 413.
 phloridzin, A., 1157.
 anti-ketogenic substance in, A., 1401.
 "superabundance," in dogs, A., 1008.
 determination of blood-sugar in, iodometrically, A., 775.
 Diabetes insipidus, treatment of, A., 1401.
 Diacetanilide, 3:5-di- and 2:3:4:5-tetra-bromo-, A., 1231.
 1:5-Diacetonaphthalene, 2:6-dihydroxy-, and its diacetate and dimethyl ether, A., 1230.
 Diacetone alcohol. See *iso*Hexan-8-ol- β -one.
 Diacetone-*l*-psicuroic acid, A., 1109.
 1:4-Diacetoxy-2-*p*-carboxyphenylnaphthalene, A., 87.
 Diacetoxymercuriamyl-*m*-cresol, A., 997.
 Diacetoxymercuri-2-chloro-5-hydroxytoluene, A., 997.
 Diacetoxymercuri-*p*-chlorophenol, A., 997.
 3:5-Diacetoxymercuri-4-hydroxybenzoic acid, A., 997.
 3:5-Diacetoxymercuri-4-nitroguaiacol, production of, (P.), B., 782.
 Diacetoxyl-1:2:4-trimethoxyanthracenecarboxylic acid, and its methyl ester, A., 347.
 Diacetyl. See Dimethyl diketone.
 Diacetyl reaction, mechanism of, A., 1126.
 3:6-Diacetylearbazole, A., 990.
 Diacetyldianisidine, halogenation of, and its bromo-, dibromo-, and dichloro-derivatives, A., 615.
 Diacetyldihydroshikimolactone, A., 1365.
 3:6-Diacetyl-1:8-dimethylallantoin, A., 226.
 3:9-Diacetyl-1:7-dimethylspirodihydantoin, A., 226.
 1:4-Diacetyl-3:5-dimethylpyrazole, A., 1508.
 4:4'-Diacetyldiphenyl, 4:4'-dichloro-, A., 85.
 4:4'-Diacetyldiphenylamine, 2-nitro-, A., 990.
 Diacetylene. See Butadi-inene.
 Di-(β -acetylethyl)sulphone, A., 498.
 2:7-Diacetylfluorene, oxidation of, A., 346.
 Diacetylglucuron methylglycoside and *p*-nitrobenzylglycoside, A., 1352.
 Diacetylmercuridimethoxyphenylbutane, A., 1515.
 Diacetylmesitylene, *di*(*di*iodo-), A., 979.
 Diacetylmethane, reaction of, with niobium and tantalum pentachlorides, A., 73.
 1:6-Diacetyl-3-methylallantoincarboxylamide, A., 225.
 1:9-Diacetyl-3-methyl-7-ethylspirodihydantoin, A., 225.
 Diacetyl-3-methylhydantoins, A., 223.
 α -Diacetyl- β -methylpentane- α -dicarboxylic acid, derivatives of, A., 65.
 ON-Diacetyl-2':3'-naphthiminazolone, A., 762.
 5:4'-Diacetyl-1-phenylbenztriazole, A., 990.
 4:6-Diacetylpyrogallol 2-methyl ether, 4:6-dichloro-, A., 86.
 2:4-Diacetylresorcinol dibenzoate, A., 220.
 dimethyl ether, A., 85.
 Diacetylretronecine, salts of, A., 365.
 Diacetyltrimethyl-leucoboleto, A., 347.
 Diacolation, B., 782, 1164.
 Diacridane, 9:9'-*dicyano*-, A., 1254.
 Diacridine, A., 1254.
 Diacridyl, and its derived radicals and luminescent salts, A., 1254.
 methosulphate, A., 1254.
 2:2'-disulphide, and its dihydrochloride, A., 1380.
 Diacyl peroxides, thermal decomposition and reactions of, A., 1223, 1482.
 2:2'-Diacyldiphenyls, A., 973.
 Dial, crystal structure of, and of veronal, A., 921.
 3:4'-Dialdehyde-6-methoxydiphenyl ether, and its derivatives, A., 637.
 3:6-Dialkoxy-10-alkylacridinium chlorides, 9-chloro-, hydrolysis of, A., 93.
 derivatives, A., 93, 1132.
 3:6-Dialkoxy-9-arylamino-10-alkylacridinium chlorides, synthesis of, A., 1132.
 Dialkyl sulphates, production of, (P.), B., 13.
 Dialkylacetylenes, addition of, to methyl alcohol, A., 1480.
 Dialkylaminobenzophenones, synthesis of, A., 1241.
 Dialkylaminoethoxyethyl β -aminobenzoates, anæsthetic action of, A., 1363.
 α -Dialkylaminomethyl- β -vinylacetylenes, A., 1480.
 Dialkylanilines, substituted, condensation of, with benzanilido imidochloride, A., 1241.
 p -substituted, preparation of, A., 614.
 p -nitroso-, dipole moments of, A., 430.
 Dialkylbarbituric acids, mixed, m.-p. curves of, A., 94.
 Dialkylidenecyclohexanones, transformation of, into dialkylphenols, A., 855.
 Dialkylphenols, formation of, from dialkylidenecyclohexanones, A., 855.
 Di- γ -alkylphenyldidiphenylene-ethanes, and their oxidation, A., 1358.
 Diallylbondone, A., 623.
 1:3-Diallyl-7-methylxanthine, A., 1509.
 1:5-Diallylnaphthalene, 2:6-di-hydroxy-, and its derivatives, A., 1230.
 2:6-Diallyloxy-7-methylpurine, A., 1509.
NN-Diallyl- γ -phenoxypropylamine, A., 965.
 3:5-Diallylresacetophenone, and its dimethyl ether, and its semicarbazone, A., 863.
 5:5-Diallyl-2-thiobarbituric acid, A., 1507.
 Dialysates, apparatus for quantitative recovery of, A., 1098.
 Dialysis, apparatus for, (P.), B., 51.
 cellophane and cuprophane membranes for, A., 467.
 element for, (P.), B., 387.
 of non-dissociated organic compounds, A., 1479.
 Diamagnetic compounds, molecular susceptibilities of, A., 1197.
 Diamagnetism and superconductivity, A., 689.
 of compounds, effect of hydrate formation of, A., 1311.
 of elements in powdered state, A., 1063.
 of hydrates, A., 289.
 of ions, based on Thomas-Fermi model, A., 1197.
 of ionic crystals, A., 689.

- Diamagnetism** of metallic salts in solution and in solid state, A., 1197.
of salts forming ions with inert gas configurations, A., 149.
- Diamines**, aromatic, cyclic compounds from chloral and, A., 753.
- Diamine**, metallic amines from, A., 1089.
- Diamond**, electronic structure of, A., 1306.
dynamical theory of lattice of, A., 150, 1306.
carbon linkings in, A., 1058, 1448.
elastic constants of, A., 1058.
as adsorbent and catalyst, A., 1209.
transformation of, into graphite, A., 1306.
effect of X-rays and electric discharge on oxidation of, A., 832.
use of, in hardness testing, B., 593.
- Diamyl ether**, dihydroxy-, A., 193.
- 8-Diisamylamino-6-methoxyquinoline**, and its hydrochloride, A., 500.
- Diisamyl- γ -bromopropylamine**, and its platinum chloride, A., 965.
- Di-n-amylocarbamide**, A., 1155.
- s- α -Di-n-amyldi-n-butyldiamino-n-decane**, (P.), B., 974.
- 2:4-Di-tert-amyphenol**, manufacture of, (P.), B., 716.
- NN-Diisamyl- γ -phenoxypropylamine**, A., 965.
- Diamylthiocarbamic acid**, alkali salts, production of, (P.), B., 1131.
- $\beta\beta'$ -Diamylthioldiethylamine**, A., 849.
- Diisamyltrimethylammonium bromide**, A., 965.
- Dianhydrohispidogenin-B**, and its diacetate, A., 624.
- 5:5'-Dianilino-4:4'-dimethyl-3:3'-diethylpyrromethene**, and its hydrobromide, A., 364.
- 2:2'-Dianiliuodiphenyl-2:2'-di-(2''-amino-4''-cyano)-, 2:2'-di-(2''-4''-dinitro)-, 2:2'-di-(4''-nitro-2''-amino)-, and 2:2'-di-(2''-nitro-4''-cyano)-**, and their derivatives, A., 95.
- 2(3):10-Dianilino-1-hydroxy-4:9-anthraquinone**, A., 218.
- 3:5-Di-pp'-anilinothiolbenzeneazopyridine**, A., 1360.
- 4:6-Dianilo-1:3:5-dithiazan**, and its derivatives, A., 1512.
- 4:6-Dianilo-2-methyl-1:3:5-dithiazan**, and its hydrobromide, A., 1512.
- 4:6-Dianilo-2-phenyl-1:3:5-dithiazan**, and its hydrochloride, A., 1512.
- Dianisidine**, 6-bromo-, and 6-mono- and tri-chloro-, A., 615.
- Dianisoylformoin**, A., 623.
- $\alpha\gamma$ -Dianisoylpropane**, A., 961.
- Di-o-anisyl diimino-oxalate**, A., 1492.
- $\beta\gamma$ -Dianisyladipic acid-b** and its methyl ester, A., 1492.
- $\alpha\zeta$ -Di-p-anisylhexane**, A., 1236.
- $\delta\delta$ -Di-p-anisylvalerolactone**, A., 961.
- 2:2'-Dianthraquinonyl selenide**, manufacture of, (P.), B., 763.
- 2:2'-Dianthraquinonyl, 1:1'-dicyano-**, A., 348.
- 2:2'-Dianthraquinonyl-1-carboxylic acid, 1'-amino-**, and its sodium salt, A., 348.
- 1:1'-Dianthraquinonyl-2:2'-dicarboxylic acid**, and its diethyl ester and anhydride, A., 1132.
- 2:2'-Dianthraquinonyl-1:1'-dicarboxylic acid**, and its derivatives, A., 348.
- Dianthraquinonylguanidines**, and their derivatives, A., 1254.
- Di-(β -1-anthraquinonyloxyethyl) disulphide**, A., 1490.
- Diaphragms**, asbestos, in electrolysis, B., 558.
- Diaphragms**, ceramic, structure of, B., 545.
electro-osmosis with, A., 1458.
- Diarsinic acids**, aliphatic, A., 333.
- Diaryl sulphides**, production of phenolic derivatives of, (P.), B., 841.
- 2:5-Diarylamino-terephthalic acids**, formation of quinacidones from, A., 992.
- s-Diarylcabamides**, nitration of, A., 1359.
- 9:10-Diaryldihydrophenanthrenediols**, rearrangement of, A., 973.
- 2-Diarylmethyldiphenyl-2'-carboxylic acids**, A., 973.
- 9:9-Diarylphenanthren-9-ones**, A., 973.
- Diarylselenium dihalides**, reaction of, with mercury diaryls, A., 1515.
- Diarylselenonium acetates**, preparation of, A., 875.
- Diarylthiazyl disulphides**, manufacture of, (P.), B., 349.
- Diarylthiocarbamides**, reaction of, with alicyclic ketones, A., 628.
- Diaspore**, crystal structure of, A., 686.
- Diastase**, extraction of, from green malt with sodium chloride, B., 695.
in mixtures of natural and synthetic honey, B., 428.
effect of ultra-violet light on action of, A., 1415.
effect of, on α -maltsides, A., 848.
malt-, determination of saccharifying power of, B., 1065.
pancreatic, A., 1278.
salivary, effect of zinc salts on, A., 404.
- Diastatic strength**, determination of, B., 650.
- Diathermy**, creatinine clearance during hyperthermia of, A., 1401.
pancreatic, hypoglycæmic action of, A., 1401.
- Diathesis**, hæmorrhagic, arrest of heavy bleeding in, A., 644.
- Diatoms**, photosynthesis in, A., 1166.
- Diatomite**, use of, in paints, B., 319.
- Diazoacetic acid**, esters, action of, on chlorophyll derivatives, A., 871.
ethyl ester, reaction of, with mercuric chloride, A., 202.
- 2- ω -Diazoacetanthraquinone, 1-chloro- and 1-nitro-**, A., 342.
- Diazoaminobenzene**, metallic salts of, A., 338.
derivatives, metallic salts of, A., 969.
- Diazoaminobenzene, 4-bromo-2'-nitro-**, A., 969.
- Diazoamino-compounds**, metallic salts of, A., 969.
- Diazo-anhydrides**, formation and decomposition of, from viewpoint of electronic theory, A., 332.
- Diazobenzene 2-naphthyl sulphide**, A., 1490.
- Diazo-compounds**, manufacture of, (P.), B., 985.
thermochemistry of, A., 169.
effect of azo-dyes on photolysis of, A., 713.
velocity of decomposition of, in water, A., 173, 1082.
reaction of, with thallium trichloride, A., 1139.
manufacture of derivatives of, (P.), B., 14.
- Diazoimino-compounds**, manufacture of, (P.), B., 622.
from heterocyclic imines, (P.), B., 1134.
and their use in dyeing and printing, (P.), B., 349, 1086.
dyeing and printing with, (P.), B., 264.
- Diazoiketones**, formation and decomposition of, from viewpoint of electronic theory, A., 332.
- Diazomesitylenesulphonic acid**, derivatives of, by reaction with glycerol, A., 338.
- Diazomethane**, structure of, A., 687.
preparation of, and its homologues, A., 479.
action of, on imides, A., 1357.
with trihydroxyglutaric and tartaric acids, A., 196.
addition of, to alkannin methyl ether, A., 1253.
derivatives, action of, on azides of naphthaquinones, A., 1243.
- β -Diazonaphthalene, 2-naphthyl sulphide**, A., 1490.
- 4-Diazonaphthalene 1-oxide, 2-nitro-**, A., 856.
- Diazodinitrophenol**, production of, (P.), B., 176.
- Diazonium compounds**, manufacture of, from 4-aminodiarylaminines, (P.), B., 985.
thermal decomposition of, A., 1119.
detection of, by means of resorufin, A., 228.
- Diazonium groups**, A., 743.
negative character of, A., 338.
- Diazo-solutions**, dry products for production of, (P.), B., 717.
- Diazotates**, normal decomposition of, A., 78.
- Diazotisation**, mechanism of, A., 1232.
- m-Diazotoluene 2-naphthyl sulphide**, A., 1490.
- Diazo- $\beta\beta\beta$ -triphenylethane**, A., 338.
- 5:5'-Dibenzamido-2:2'-dianthraquinonyl selenide**, manufacture of, (P.), B., 763.
- o-NN-Dibenzamidophenyl benzoate**, A., 1361.
- aa-Dibenzamidopropionic acid**, and its derivatives, A., 974.
- aa-Dibenzamidopropionylglycine**, A., 974.
- Dibenzanthrene**, manufacture of, (P.), B., 93.
production of colloidal dispersions of, using lecithin, A., 1460.
- Dibenzanthrone derivatives**, manufacture of, (P.), B., 622.
- Dibenzanthrone, dihydroxy-**, manufacture of salts of, (P.), B., 220.
- Dibenzanthrone dyes**, manufacture of, (P.), B., 15, 1087.
vat, manufacture of, (P.), B., 95.
- isoDibenzanthrone dyes**, manufacture of, (P.), B., 15.
- Dibenzanthronedicarboxylic acid**, A., 859.
- 2:2'-Dibenzanthronyl, oxidation of**, A., 348.
- o-(NN-Dibenzenesulphonamido)phenyl benzenesulphonate**, A., 1361.
- NN-Dibenzenesulphonyl-p-nitroaniline**, A., 1118.
- NN-Dibenzenesulphonyl-p-phenylenediamine**, and its d-camphor-10-sulphonate, A., 1118.
- 1:2:5:6-Dibenzfluorene**, A., 1359.
- Dibenzfuran**. See Diphenylene oxide.
- Dibenzfuran-1-carboxyl chloride**, A., 986.
- Dibenzfuran-1-carboxylamide**, A., 986.
- Dibenzfuran-1:8-dicarboxylic acid**, and its dimethyl ester, A., 985.
- Dibenzfuran-1:8-disulphonic acid**, and its derivatives, A., 985.
- Dibenzfuryl groups**, orientation and aromaticities of, A., 867.
- 4-Dibenzfuryltriphenyl**, A., 867.
- 1:8-Dibenzhydrynaphthalene**, A., 858.
- Di-(2:2'-benziminazoly)thiocarbamide**, A., 631.
- 1:2:3:4-Dibenznaphthalene**, in coal tar, A., 1358.
- 1:2:5:6-Dibenzoquinacridone**, and its derivatives, A., 992.

- 3:4:7:8-Dibenzoquinacridone, and *dodeca-chlorodihydroxy*-, A., 992.
m-Dibenzoylbenzene, 4:4'-*dihydroxy*-, and its dihydrate, and 3:3'-*dinitrodihydroxy*-, A., 753.
 2:9-Dibenzoylcarbazole, A., 990.
 Dibenzoylcarbinol, A., 346.
 1:1'-Dibenzoyldibenzanthronyl selenide and diselenide, (P.), B., 444.
 4:4'-Dibenzoyldibenzophenone, and its trioxime, A., 1371.
as-Dibenzoyldiphenylethylene, A., 494.
 γ -Dibenzoyl- α -diphenylhexadiene- α -dione, A., 1500.
meso- γ -Dibenzoyl- α -diphenyl-*n*-hexa- α -dione, A., 1499.
cis- γ -Dibenzoyl- α -diphenyl- Δ^7 -hexene- α -dione, A., 1500.
 Di- β -benzoylethylamine, salts and derivatives of, A., 355.
 9:9-Di- β -benzoylethyl-10-anthrone, and its dioxime, A., 1124.
 Dibenzoylethylene, structure of bimolecular reduction products of, A., 1499.
trans- α -Dibenzoylethylene, dioxime from, and its diacetate, A., 355.
 α -Dibenzoylethylenes, *di-p*-bromo-, and *di*-bromo- and *dichloro-di-p*-bromo-, A., 352.
 α -Dibenzoyl- Δ^4 -hexadiene, A., 874.
 α -Dibenzoylhexane semicarbazone, A., 874.
s-Dibenzoylhydrazine, *di-p*-amino-, diacetyl derivative, A., 974.
 Dibenzoylmethane, synthesis of 1:1':3:3'-diphenylenerubene from, A., 76.
 Dibenzoylmethyl-2-picoliniumenolbetaine, A., 988.
 Dibenzoylmethylpyridinium perchlorate, A., 987.
 Dibenzoylmethylpyridiniumenolbetaine, A., 987.
 Dibenzoylmethylisoquinoliniumenolbetaine, A., 988.
 Di(benzoylmethyl)sulphone, A., 498.
 4:6-Dibenzoyl-*m*-dinitrobenzene, A., 619.
 3:4-Dibenzoylperylene, 3:4-*di-p*-chloro-, A., 1370.
 α -Dibenzoyl- β -phenylbutane, A., 981.
 α -Dibenzoyl- β -phenylbutyric acid, ethyl ester, A., 215.
 α -Dibenzoyl- α -phenylethylene, reaction of, with hydroxylamine hydrochloride, A., 355.
cis- α -Dibenzoyl- α -phenylethylene, β -bromo-, and β -bromo- α -*di-p*-bromo-, A., 352.
 α -Dibenzoyl- α -phenyl- β -*c*-hydroxyphenylpropane, A., 1377.
 α -Dibenzoyl- β -phenyl-*n*-pentane, A., 981.
 Dibenzoyl-*p*-toluenesulphonylmethane, A., 1116.
 1:3-Dibenzoyl-1:2:2-trimethylcyclopentane, A., 754.
NN'-Di(benzthiazolyl-1)-carbamide, and 5:5-dichloro-, A., 226.
 Dibenzthiazyl disulphide, production of, (P.), B., 622.
 2:2'-Di-(1''-2''-3''-benztriazolyl)diphenyl, *di*-5''-cyano-, and *di*-5''-nitro-, A., 95.
 Dibenzyl. See *s*-Diphenylethane.
 Dibenzylanisole, A., 1357.
 3:5-Dibenzylazobenzene, 4'-nitro-4-hydroxy-, A., 855.
 4:4'-Dibenzylbenzophenone, and its oxime, A., 1371.
 4:4'-Dibenzylidiphenylcarbinol, A., 1371.
 4:4'-Dibenzylidiphenylcarbinol, 4:4'-*di- ω* -hydroxy-, A., 1371.
 4:4'-Dibenzylidiphenylmethane, A., 1371.
 4:4'-Dibenzylidiphenylmethyl chloride, 4:4'-*di- ω* -chloro-, A., 1371.
 Di-(α -benzylethyl) sulphide, A., 1230.
NN'-Dibenzylethylenediamine, and its derivatives, A., 337.
 1:6-Dibenzylcyclohexanone derivatives, A., 621.
 2:6-Dibenzylcyclohexanone, 2:6-*di*-bromo-, A., 855.
 Dibenzylidenecreatinine, *di-p*-hydroxy-, A., 850.
 Dibenzylidenecyclohexanone, conversion of, into 2:6-dibenzylphenol, A., 855.
 Dibenzylidene-*d*-sorbitol α -dibenzoate, A., 1104.
 Dibenzylidenesuccinic acid, methyl ester, A., 344.
 Dibenzyl ketone, α -chloro-, and its derivatives, A., 1124.
di- α -cyano-, A., 501.
 1:5-Dibenzyl-naphthalene, 2:6-*di*hydroxy-, and its diacetyl derivative, A., 1230.
 2:4-Dibenzoyloxybenzaldehyde, A., 1128.
 3:4-Dibenzoyloxybenzaldehyde, A., 1129.
 2:4-Dibenzoyloxybenzylbenzaldehyde, and its derivatives, A., 1128.
 2:6-Dibenzylphenol, formation of, from dibenzylidenecyclohexanone, and its acetate, and 4-bromo-, A., 855.
NN-Dibenzyl- γ -phenoxypropylamine, and its hydrobromide, A., 965.
NN'-Dibenzylpiperazine, A., 1508.
 Diborane, electronic structure of, A., 1452.
 methyl derivatives of, A., 738.
 Dibromoamine, preparation of, and its reaction with Grignard reagents, A., 1334.
 Di- Δ^8 -butenyl ether, *di-p*-chloro-, A., 1221.
 Di-*n*-butyl diselenide, A., 959.
 Di-*tert*-butyl ether, manufacture of, (P.), B., 715.
 Dibutylamine dipyrocatechol borate, (P.), B., 841.
 Di- κ -butylaminodecyl disulphide, (P.), B., 1131.
 β -(β -Di-*n*-butylaminoethoxy)ethyl alcohol, and its esters, A., 1363.
 4- γ -Di-*n*-butylaminopropoxy-3-carbo- γ -di-*n*-butylaminopropoxydiphenyl, production of, (P.), B., 878.
 Diisobutylcresols, and their *p*-nitrobenzoates, A., 483.
 Di-*n*-butyl-di-*n*-dodecyl-diamino-*n*-decane, and its hydrochloride, (P.), B., 974.
 9:10-Di-*n*-butyl-9:10-dihydrophenanthrene, 9:10-*di*hydroxy-, A., 348.
 Di-*p*-*tert*-butyldiphenylamine, A., 482.
 9:10-Dibutylene-9:10-dihydrophenanthrene, 9:10-*di*hydroxy-, A., 348.
 α -Di-*sec*-butylglutaric acid, cinchonidine salt, A., 1352.
 α -Di-*sec*-butylglutaric acid, β -hydroxy-, A., 1352.
 α -Dibutylglutaric acids, A., 1352.
 2:5-Di-*sec*-butylcyclopentane-1:3:4-triol, A., 1351.
 2:5-Di-*sec*-butylcyclopentane-1:3:4-trione dioxime, A., 1351.
 2:6-Diisobutylphenol, A., 483.
 2:4-Di-*tert*-butylphenol, manufacture of, (P.), B., 716.
NN-Di-*n*-butyl- γ -phenoxydecylamine, A., 965.
NN-Diisobutyl- γ -phenoxypropylamine, and its platinichloride, A., 965.
 Di-(*N*-*p*-*tert*-butylphenyl)-*p*-phenylenediamine, A., 482.
 α -Diisobutylphosphinoacetic acid, ethyl ester, sodium salt, tautomerism of, A., 72.
NN-Di-*n*-butylpiperazine, A., 1508.
 4:6-Di-*tert*-butylresorcinol, and its dimethyl ether, A., 614.
 3:4-Di-*tert*-butylseleno- Δ^3 -cyclopentene 1:1-dioxide, A., 100.
NN-Di-*n*-butyl-dithiocarbamic acid, A., 980.
 Di-*n*-butyl thioketone, A., 1107.
 Diisobutyric acids, thio-, A., 197.
 Diisobutyryldiphenylcyclobutanes, A., 83.
 2:4-Dibutyl- α -naphthol, A., 484.
 4:4'-Dibutyl-3:5:3':5'-tetramethylpyrromethane, and its hydrobromide, A., 362.
 Dicampborylsemicarbazide, A., 619.
 "Dicapho," bone-meal, and limestone as mineral supplements for pigs, A., 654.
 Dicarbamyloxalylurethane, A., 360.
 Dicarbazyls, A., 95.
 1:1'-Dicarbazyl, synthesis of, A., 95.
 3:4-Dicarbethoxy-2-aldehyde-1-propylpyrrogallol, 5-methyl ether, A., 978.
 α -Dicarbethoxy- α -dibutylglutaric acid, diethyl ester, A., 1352.
 5:5'-Dicarbethoxy-4:4'-dimethyl-3:3'-dibutylpyrromethane, A., 363.
 5:5'-Dicarbethoxy-4:4'-dimethyl-3:3'-tetramethyldisuccinyl-2:2'-pyrromethane, A., 994.
 3:3'-Dicarbethoxydiphenyl sulphide, 4:4'-*di*-hydroxy-, and its derivatives, A., 343.
 Dicarbethoxydivaricic acid, hydroxy-, A., 978.
 2:5-Di(carbethoxymethyl)-3-methyl-4-ethylpyrrole, A., 632.
 Dicarbethoxysekika-aldehyde, A., 978.
 Dicarbethoxysekikaic acid, A., 978.
 α -Dicarbomethoxy-1-(+)-lysine and its amide, A., 1416.
 Dicarbomethoxytyrosylserine, A., 1014.
 3:3'-Dicarbomethoxydiphenyl sulphide, 4:4'-*di*hydroxy-, and its derivatives, A., 343.
 Di-(α -carbomethoxyethyl) carbonate, (P.), B., 716.
 2:5-Dicarbomethoxy-3-methyl-4-ethylpyrrole, A., 632.
 Di-(α -carbomethoxyisopropyl) carbonate, (P.), B., 716.
 3:3-Dicarbophenoxydiphenyl diacetate and sulphide, 4:4'-*di*hydroxy-, A., 343.
 4-2':3'-Dicarboxyanilinoanthraquinone, 1-amino-, manufacture of, (P.), B., 722.
 2:2'-Di-(4''-carboxyanilino)diphenyl, *di*-2''-amino-, and *di*-2''-nitro-, A., 95.
 3:6-Dicarboxybenzoyl-*N*-ethylcarbazole, preparation of, A., 223.
 2:2'-Di-(5-carboxy-1''-2''-3''-benztriazolyl)-diphenyl, A., 95.
 α -Dicarboxy- α -dibutylglutaric acid, and its anhydride, A., 1352.
 4:5-Dicarboxy-3:5'-dimethyl-3:4'-diethylpyrromethane hydrobromide, A., 1134.
 5:5'-Dicarboxy-4:4'-dimethyl-3:3'-disuccinyl-2:2'-pyrromethane, A., 994.
 3:3'-Dicarboxydiphenyl sulphide, 4:4'-*di*-hydroxy-, and its derivatives, A., 343.
 2:7-Dicarboxydiphenylene oxide, and its dimethyl ester, A., 757.
pp'-Di-(α -carboxyethyl)azoxybenzene, A., 1489.
 Di-(carboxynitrophenoxy-*m*-tolyl) disulphides, A., 1491.
 3:4-Di-*p*-carboxyphenyl-1:2-naphthaquinone, A., 87.
 Dicarvelone di-(*m*-nitrobenzhydrazide) and di-(2:4-dinitrophenylhydrazide), A., 743.
Dichapetulum cymosum, poisoning of stock by, A., 657.
 Dichloramine-B, production of, B., 832.
 Dicholesteryl carbonate, A., 745.
 Dicholesteryldicarboxylic acid, phenylene esters, A., 745.
 Dichroism, circular, A., 722.
 Dicinnamoylmethane derivatives, dyeing properties of, A., 347.

- Diennamoylmethane, 2:2'-dihydroxy-, attempted synthesis of, A., 353.
 Diennamylacetoacetic acid, ethyl ester, A., 1482.
 Diennamylidenecreatinine, and its picrate, A., 352.
 Dickite from Pennsylvania, A., 954.
 hydrothermal synthesis of, A., 1333.
 Dicodide. See Dihydrocodeinone.
 Di(coumarino- α -carbonyl)methane, A., 353.
 Di(coumarinyl-3-carbonyl)acetic acid, ethyl ester, A., 353.
 Dirototonyl peroxide, thermal decomposition of, A., 327.
 Dicyanamides, A., 482.
 Dicyanogen, action of, on phenols, A., 1491.
 Dicyclic compounds, stereochemistry of, A., 208, 971.
 thermal decomposition of, A., 612.
 reduced, synthesis of, A., 1239.
 Didehydromatrine, and its salts, A., 767.
 Dideuteracetylene, infra-red absorption spectrum of, A., 1053.
 infra-red rotation vibration spectrum of, A., 10.
 Raman effect of, A., 146.
 deformation frequency of, A., 806.
 vibrational frequency of, A., 1448.
 polymerisation of, by α -rays, A., 943.
 mercury-photo-sensitised polymerisation of, A., 943.
 Dideuterethane, tetrachloro-, Raman spectrum of, A., 806.
 Dideutereethylene, dichloro-, Raman spectrum of, A., 806.
 4:5-Dideuteroceprostanone, A., 1408.
 Dideuteromalononic deuteracid, A., 731.
 2:4-Di- β -dibutylaminoethoxy-6-methylpyrimidine, A., 759.
 Di(dicarbobenzoyloxytyrosyl)serine, A., 1014.
 Di(dicarbobenzoyloxytyrosyl)tyrosine, A., 1014.
 2:4-Di- β -diethylaminoethoxy-6-methylpyrimidine, A., 759.
 2:4-Di- β -diethylaminoethoxypyrimidine, A., 759.
 2:4-Di- β -diethylaminoethoxyquinazoline, A., 759.
 2:4-Di- $\beta\beta$ -diethylaminoethylquinoline, and its salts, A., 500.
 $\alpha\eta$ -Di(diethylamino)heptane, and its hydrobromide, A., 990.
 $\alpha\gamma$ -Di(diethylamino)isopropyl phenyl-naphthylcarbamate hydrochloride, A., 482.
 2- $\beta\beta$ '-Di(diethylamino)isopropylpyridine, and its derivatives, A., 499.
 Di-(1:2-dihydro-2-quinolyl) ether, di-1-cyano-, A., 93.
 $\beta\gamma$ -Di-3:4-dimethoxyphenyladipic acid- α , and its methyl ester, A., 1492.
 Di-(β -2:4-dimethoxyphenylethyl)hydroxylamine, and its salts, A., 745.
 γ -Di-(3:4-dimethoxyphenyl)itaconic acid, and its anhydride, A., 860.
 $\gamma\gamma$ -Di-3:4-dimethoxyphenyl- n -propane- $\alpha\beta$ -dicarboxylic acid, A., 861.
 Di-(α -dimethylamino- γ -butyl)amine, and its salts, A., 478.
 Di-2:3-dimethylbutadiene- p -xyloquinone, A., 1372.
 Di(diphenic)semicarbazide, A., 619.
 $\omega\omega$ -Di(diphenylarsino)- ω -xylene, and its mercuric chloride compound, A., 768.
 Di(diphenylguanidinium) tetrascenide, A., 228.
 Di-(2-diphenyl) disulphide, di-5-bromo-, A., 627.
 Di- p -diphenyl sulphoxide, A., 85.
 Di- p -diphenylacetanilide, and chloro-, A., 751.
 Di- p -diphenylacetic acid, A., 751.
 Di- p -diphenylacetyl chloride, and chloro-, A., 751.
 Di- p -diphenylglycollic acid, A., 751.
 Di- p -diphenylketen, A., 751.
 Di(diisopropylidene)glucose) disulphide, A., 68.
 Di(di- ω -tolylguanidinium) tetrascenide, A., 228.
 Di- n -dodecylamine, and its hydrochloride, A., 70.
 Di- β -isoduroylodomethane, A., 979.
 Dielectrics, (P.), B., 911.
 effect of alternating stresses on, B., 638.
 properties of, at high frequencies, B., 1100.
 photo-electric effect between metals and, A., 1293.
 transfer of electrons from metals to, A., 5, 557.
 potential of, at solution-air interface, A., 931.
 breakdown of, under high voltage, A., 1303.
 halogenated hydrocarbons for, (P.), B., 773.
 liquid, effect of form of water distribution on electrical stability of, A., 580.
 ionic mobilities in, A., 148.
 hygroscopicity of, A., 580.
 moulded, properties of, B., 461.
 vitreous, manufacture of, (P.), B., 902.
 Dielectric constants, A., 809.
 measurements of, A., 58, 952, 1475.
 measurement of conductivity and, A., 1476.
 and superficial salting out, A., 1317.
 tensor nature of, in anisotropic media, A., 1304.
 chemical applications of, A., 283, 567.
 applications of, in chemical industry, B., 957.
 in aqueous solution, A., 294.
 of conducting solutions, determination of, A., 466.
 of ionic crystals, variation of, with temperature, A., 567.
 of electrolytes, A., 699.
 buoyancy method of measurement of, A., 723.
 in benzene solution, A., 13.
 of amphoteric electrolytes, A., 699.
 of aqueous solutions of electrolytes, at high frequencies, A., 13.
 of gases and vapours, A., 567, 916, 1304.
 of hydrocarbons, B., 888.
 of liquids and their mixtures, A., 283.
 influence of magnetic fields on, A., 13, 1192.
 under high pressure, A., 683.
 of organic liquids, effect of hydrogen linking on, A., 683.
 of polar liquids, constancy of, A., 431.
 of liquids and solids, A., 683.
 of solids, determination of, A., 1217.
 of solutions of strong electrolytes, determination of, A., 1318.
 in solutions of tetrapoles, A., 694.
 of solvents, A., 1056.
 in relation to molecular polarisation in solution, A., 927.
 Dielectric liquids, (P.), B., 193.
 cooling and insulation of, (P.), B., 508, 682.
 motion due to action of electric fields on, A., 283.
 Dielectric polarisation. See under Polarisation.
 Dielectric properties, relation of, to constitution, A., 808.
 Dielectric meter, uses of, A., 58.
 Diels-Alder reaction in fulvene series, A., 852.
 Dienes, synthesis of, A., 978.
 stereochemistry of, A., 211, 341.
 steric course of, A., 1500.
 thermochemistry and kinetics of, A., 938.
 condensation of, with alkylated quinones, A., 1372.
 Dies, cold-drawing, alloy steel for, (P.), B., 155.
 Diet and nutrition, A., 1154.
 relation of, to nutritional response, A., 1154.
 in relation to disease, A., 774.
 acid and alkaline, effect of, on oxidation in the body, A., 392.
 apple and banana, physical chemistry of faeces of children on, A., 380.
 balanced, in relation to energy values, A., 239.
 of chicks, supplementary iodine in, A., 654.
 of pre-school children, protein required in, A., 652.
 high-fat, effect of, on respiratory quotient and heat production, A., 241.
 fruit and vegetable, effect of, on iron metabolism of infants, A., 115.
 poor in inorganic salts but containing edestin, effect of, A., 892.
 milk, effect of addition of minerals and sucrose to, on rats, A., 114.
 high- and low-protein, renal effects of, A., 237.
 of rats and mice, cellulose in, A., 240.
 synthetic, for herbivora, A., 1529.
 for rabbits, A., 1529.
 vegetarian, containing wheat bran, digestibility of, A., 1014.
 Diethanolamine, compound of theophylline and, (P.), B., 46.
 4:4'-Diethoxyarsenobenzene, 3:3'-diamino- and 3:3'-dinitro-4:4'-di- β -hydroxy-, A., 100.
 2:5-Diethoxybenzene, 4-amino-1-nitro-amino-, (P.), B., 1132.
 Diethoxybenzenes, hydroxy-, A., 1504.
 2:2'-Diethoxy-5:5'-dimethylchalcone- α -acetic acid, and its ethyl ester and derivatives, A., 1366.
 p -Diethoxydiphenylhydrogutta-percha, A., 1501.
 $\beta\beta$ -Diethoxyethyl geranyl ether, A., 846.
 2:4-Diethoxyethylbenzene, 2:4-di- β -hydroxy-, A., 1247.
 $\beta\beta$ -Diethoxyheptane, electric moment of, A., 683.
 $\beta\beta$ -Diethoxypropane, $\alpha\gamma$ -dichloro-, A., 1353.
 2:4-Diethoxypyrimidine, action of alkali on, A., 629.
 3:4-Diethoxytoluene, 6-nitro-, A., 747.
 1:1'-Diethoxy- m -tolylglutaric acid, and its ethyl ester and lactone, A., 1366.
 $\beta\beta$ -6:6'-Diethoxy- m -tolylglutaric acid, and its esters and derivatives, A., 1366.
 Diethyl sulphide, determination of, in urine, iodometrically, A., 380.
 $\beta\beta$ -dichloro-, solubility of, in kerosene, B., 261.
 poisoning by. See under Poisoning.
 determination of penetration of materials by, B., 752.
 trisulphide, Raman spectrum of, A., 681.
 sulphonylate, A., 845.

- Diethyl thiosulphite, fission of, A., 845.
thiosulphites, isomeric, A., 326.
Diethylacetate, effect of electrolytes on hydrolysis of, A., 829.
Diethylacetacetic acid, *di-α*-hydroxy-, ethyl ester, A., 65.
4:5-Diethylacetophenone, 2-hydroxy-, and its derivatives, A., 766.
Diethylacetylquinine hydrochloride, production of, (P.), B., 974.
Diethylacetylsalicylic acid, and its bromo-derivative, sodium, calcium, and quinine salts and amyl and methyl esters, (P.), B., 829.
Diethylamine, thermal decomposition of, A., 1081.
reaction of, with epichlorohydrin, A., 202.
as catalyst in condensation of aromatic aldehydes with hydantoins, A., 628.
5-Diethylaminoacetamide-2-ethoxy-pyridine, manufacture of, (P.), B., 430.
3-Diethylaminoacetyldibenzfuran, and its hydrochloride, A., 986.
9-Diethylaminoacetyl-1:2:3:4:5:6:7:8-octahydrophenanthrene, and its salts, A., 973.
β-Diethylaminoisomyl alcohol, A., 500.
ε-Diethylamino-*n*-amyl chloride, A., 874.
β-Diethylaminoisomyl chloride, A., 500.
8-α-Diethylamino-8-amylamino-6-methoxyquinoline, (P.), B., 940.
8-(β-Diethylaminoisomyl)amino-6-methoxyquinoline, A., 500.
2-α-Diethylamino-8-amylaminonaphthalene, (P.), B., 940.
α-Diethylamino-8-amylaniline, (P.), B., 940.
7-Diethylaminoanthraquinone, 2-chloro-, A., 87.
2-Diethylaminoanthraquinone-7-sulphonic acid, sodium salt, A., 87.
β-Diethylamino-α-benzylethyl ethyl ether, A., 81.
γ-Diethylamino-Δ^α-butenoic acid, ethyl ester, and its picrate, A., 64.
γ-Diethylaminoisobutyl chloride, and its picrate, A., 874.
γ-Diethylaminoisobutylhydrocupreine, and its sulphate, A., 874.
Di(ethylamino)chloroarsine, *di*-(β-amino), dihydrochloride, A., 1139.
Diethylamino-dichloroarsine, A., 1139.
8-ακ-Diethylamino-*n*-decane, (P.), B., 974.
α-Diethylamino-β-diethylaminomethyl-sec-butyl phenyl-α-naphthylcarbamate hydrochloride, A., 482.
8-(γ-Diethylamino-ββ-dimethylpropyl)-amino-6-methoxyquinoline, A., 500.
N-γ-Diethylamino-ββ-dimethyl-*n*-propyl-*p*-aminophenol, and its dihydrochloride, A., 482.
N-γ-Diethylamino-ββ-dimethyl-*n*-propyl-*p*-anisidine, and its dihydrochloride, A., 482.
4:4'-Di(ethylamino)diphenylmethane, 4:4'-dinitroso-, and its 3:3'-dinitro-derivative, A., 337.
Diethylaminoepihydrin, A., 202.
4-β-Diethylaminoethoxy-3-carbo-β-diethylaminoethoxydiphenyl, production of, (P.), B., 878.
1-β-Diethylaminoethoxydibenzfuran, and its hydrochloride, A., 986.
Diethylaminoethoxydiethoxybenzenes, and their hydrochlorides, A., 1504.
β-(β-Diethylaminoethoxy)ethyl alcohol, and its esters, A., 1363.
4-β-Diethylaminoethoxy-6-methylpyrimidine, A., 759.
2-β-Diethylaminoethoxyphenol hydrochloride, A., 1361.
2-*p*-β-Diethylaminoethoxyphenyl-4-methylthiazole, and its dihydrochloride, (P.), B., 750.
Diethylaminoethyl alcohol, esters, toxicity of, A., 116.
β-Diethylaminoethyl chloride, and its hydrochloride, A., 874.
α-naphthoate, anaesthetic action of, A., 395.
phenyl-α-naphthylcarbamate, and its salts, A., 482.
4'-β-Diethylaminoethylaminobenzylamino-hydrocotarnine, and its salts, A., 767.
4-β-Diethylaminoethylaminodiphenyl ether, (P.), B., 1132.
9-β-Diethylaminoethylamino-2-methoxyphenanthridine salts, A., 1507.
8-β-Diethylaminoethylamino-6-methoxyquinoline, and its hydrochloride, (P.), B., 940.
8-(β-Diethylaminoethylaminomethyl)quinoline trihydrobromide, A., 1506.
9-β-Diethylaminoethylaminophenanthridine, 3-bromo-, salts of, A., 1507.
1-β-Diethylaminoethylaminopyridine, (P.), B., 940.
4-Diethylaminoethylaminopyridine, 3-amino-, and 3-nitro-, A., 993.
8-β-Diethylaminoethylaminoquinoline, 6-chloro-, and its hydrochloride, (P.), B., 940.
β-Diethylaminoethylaniline, and its picrate, production of, (P.), B., 940.
2-β-Diethylaminoethylcarbamylidiphenyl, 4-amino-, hydrochloride, A., 1155.
Diethylaminoethyldibenzfurans, and their hydrochlorides, A., 986.
3-β-Diethylaminoethyl-5:5-diethylbarbituric acid, and its hydrochloride, A., 223.
3-*p*-Diethylaminoethyl-5-ethyl-5-*n*-butylbarbituric acid, and its hydrochloride, A., 223.
3-β-Diethylaminoethyl-5-Δ¹-cyclohexenyl-1:5-diethylbarbituric acid, and its hydrochloride, A., 223.
β-Diethylaminoethylhydrocupreine, and its sulphate, A., 874.
3-β-Diethylaminoethyl-5-phenyl-5-ethylbarbituric acid, and its hydrochloride, A., 223.
2-β-Diethylaminoethylpyridine, and its salts with metallic halides, A., 499.
9-Diethylaminoethyl-3:4-pyridino-7:8:9-triazole, A., 993.
2-β-Diethylaminoethylquinoline, and its salts, A., 499.
4-β-Diethylaminoethylquinoline, and its derivatives, A., 500.
β-Diethylaminoethyl-*p*-toluidine, A., 767.
δ-Diethylamino-*n*-heptane, and its salts, A., 736.
γ-Diethylaminoethyl alcohol, A., 990.
γ-Diethylaminoethyl bromide, and its hydrobromide, A., 990.
8-γ-Diethylamino-*n*-heptylamino-6-methoxyquinoline, A., 990.
ζ-Diethylaminoethyl alcohol, and its sodium sulphate, (P.), B., 1131.
β-Diethylaminoisohexyl chloride, and its hydrochloride, A., 500.
8-ζ-Diethylamino-*n*-hexylamino-6-methoxyquinoline, and its meconate, A., 990.
8-β-Diethylaminoisohexylamino-6-methoxyquinoline, and its meconate, A., 500.
3-β-Diethylamino-α-hydroxyethyldibenzfuran, and its hydrochloride, A., 986.
9-β-Diethylamino-α-hydroxyethyl-1:2:3:4:5:6:7:8-octahydrophenanthrene, and its salts, A., 973.
2-γ-Diethylamino-β-hydroxypropoxy-1:3-diethoxybenzene, and its hydrochloride, A., 1504.
3-γ-Diethylamino-β-hydroxypropyldibenzfuran, and its hydrochloride, A., 986.
9-β-Diethylamino-α-hydroxy-*n*-propyl-1:2:3:4:5:6:7:8-octahydrophenanthrene, and its salts, A., 973.
2-Diethylaminomethylarsindole, 1:3-dichloro-, and 3-chloro-1-cyano-, and their salts, A., 997.
4-Diethylamino-3-methylbenzophenone, A., 1241.
β-Diethylaminomethylbutanol, preparation of, A., 849.
9-δ-Diethylamino-α-methylbutylaminophenanthridine, and 3-bromo-, salts of, A., 1507.
ε-Diethylaminononyl acetate, and bromide and its hydrobromide, A., 990.
8-ε-Diethylamino-*n*-nonylamino-6-methoxyquinoline, A., 990.
ε-Diethylamino-Δ^α-pentadiene, γ-chloro-, A., 1480.
ε-Diethylaminopent-α-en-γ-inene, A., 1480.
4-Diethylamino-1-phenyl-1:4:5:6-tetrahydropyridazin-6-one, 5-bromo-, A., 991.
Di(ethylamino)platinous salts, A., 1228.
N-Diethylaminopropionic acid, ethyl ester, A., 331.
9-α-Diethylaminopropionyl-1:2:3:4:5:6:7:8-octahydrophenanthrene, and its salts, A., 973.
4-γ-Diethylaminopropoxy-6-methylpyrimidine, A., 759.
γ-Diethylaminopropyl α-naphthoate, anaesthetic action of, A., 395.
8-γ-Diethylaminopropylamino-6-methoxyquinoline, and its hydrochloride and hydriodide, (P.), B., 940.
8-(β-Diethylamino-α-isopropylethyl)amino-6-methoxyquinoline, A., 500.
β-Diethylamino-*n*-propylhydrocupreine, and its sulphate, A., 874.
2-γ-Diethylaminopropylpyridine, and its gold chloride compound, A., 499.
2-Diethylaminopyridine-5-arsinic acid, A., 1156.
8-Diethylaminoquinoline, and its dihydrobromide, A., 1251.
λ- and κ-Diethylaminoundecic acid, ethyl esters, A., 990.
κ-Diethylaminoundecyl alcohol, A., 990.
κ-Diethylaminoundecyl chloride, and its hydrochloride, A., 990.
λ-Diethylaminoundecyl chloride, and its hydrochloride, A., 990.
8-κ-Diethylamino-*n*-undecylamino-6-methoxyquinoline, A., 990.
Diethylbarbituric acid, distribution of, in brain, A., 1396.
1:2'-Diethyl-5:6-benz-2:1'-cyanine iodide, A., 224.
2:2'-Diethyl-3:4-benzoxathiacyanine iodide, manufacture of, (P.), B., 398.
2:2'-Diethyl-5:6-benzoxathiacyanine iodide, manufacture of, (P.), B., 398.
o-2:4-Diethylbenzoylbenzoic acid, A., 859.
3:5-Diethyl-2-α-benzyloxypropylpyridine, A., 628.
2:2'-Diethyl-4:5:4':5'-bisethylenedioxy-selenadibenzocyanine iodide, production of, (P.), B., 526.
2:2'-Diethyl-4:5:4':5'-bisethylenedioxy-selenadibenzocyanine iodide, production of, (P.), B., 526.
2:2'-Diethyl-4:5:4':5'-bismethylenedioxythiadibenzocyanine iodide, production of, (P.), B., 526.

- 2:2'-Diethyl-4:5:4':5'-bismethylenedioxythiatriccyanine iodide, production of, (P.), B., 526.
- as*-Diethylcarbamide, *di*- β -hydroxy-, A., 1155.
- 3:6-Diethylcarbazole, A., 990.
- Diethyl- β -chloro- γ -methyl-*n*-butylamine, A., 500.
- 1:2'-Diethyl-2:1'-cyanine iodide, A., 224.
- Diethylcyanogold, A., 1112.
- Diethyldicyanogold, A., 1112.
- 2:2'-Diethyl-4:4'-diethoxy-5:5'-dimethylthiadicarbocyanine iodide, production of, (P.), B., 526.
- 7:9-Diethyl-4:5-dihydric acid, 4:5-*di*-hydroxy-, reaction of, with acetic anhydride, and its diacetyl derivative, A., 96.
- 2:2'-Diethyl-9:9'-*endo*dimethenylcarbocyanine bromide, (P.), B., 842.
- 2:2'-Diethyl-7:7'-*endo*dimethenylloxacarbo-cyanine bromide, (P.), B., 842.
- 2:2'-Diethyl-4:4'-dimethoxy-5:5'-dimethylthiadicarbocyanine iodide, production of, (P.), B., 526.
- 2:2'-Diethyl-4:4'-dimethoxy-5:5'-dimethylthiatricarbocyanine iodide, production of, (P.), B., 526.
- 3:3'-Diethyl-2:2'-dimethylthiolcarbocyanine bromide, (P.), B., 843.
- Diethylene glycol *tert*.-butyl ether, manufacture of, (P.), B., 715.
- derivatives of, A., 1351.
- Diethylene dioxide. See Dioxan.
- Diethyl-*n*-heptylamine, and its hydrochloride, A., 71.
- 1:2-Diethyl- Δ^4 -cyclohexene, A., 738.
- Diethyl- γ -hydroxy- $\beta\beta$ -dimethylpropylamine, A., 500.
- Diethyl- β -hydroxyethylamine, *di*- β -bromo-, derivatives of, A., 71, 358.
- 3:5-Diethyl-2- β -hydroxy- α -ethyl-*n*-amylpyridine, A., 628.
- Diethyl- β -hydroxy- γ -methyl-*n*-butylamine, A., 500.
- Diethyl- γ -hydroxy- γ -phenyl- $\beta\beta$ -dimethylpropylamine, and its hydrochloride, A., 1362.
- 1:2:3:4-Diethylidenesorbitol, A., 734.
- 2:3-Diethylindole, A., 1378.
- Diethyl ketone 2:4-dinitrophenylhydrazon, A., 482.
- 1:2-Diethylmalonylamidobenziminazole, A., 631.
- NN*-Diethylmorpholinium salts, *di*- β -bromo-, A., 71.
- 1:5-Diethylnaphthalene, 2:6-*di*hydroxy-, and its dimethyl ether, A., 1230.
- Diethylolamine, reactivity and p_H of, A., 849.
- 3:4-Diethylphenol, and its ethers and *p*-nitrobenzoate, A., 766.
- NN*-Diethyl- γ -phenoxydecylamine, A., 965.
- 2:2'-Diethyl-9:9'-*c*-phenylene-2:2'-carbocyanine bromide, (P.), B., 842.
- 2:2'-Diethyl-9:9'-*o*-phenylene-4:4'-quinazocarbo-cyanine iodide, (P.), B., 843.
- 2:2'-Diethyl-7:7'-*o*-phenylenethiocarbocyanine *p*-toluenesulphate, (P.), B., 842.
- α -Diethylphosphinoacetic acid, phenyl ester, A., 72.
- α -Diethylphosphinopropionic acid, phenyl ester, A., 72.
- NN'*-Diethylpiperazine, and *NN'*-*di*- β -hydroxy-, salts of, A., 1508.
- 2:2'-*Di*- α -ethyl-*n*-propyldiphenyl, 2:2'-*di*- α -hydroxy-, A., 1496.
- 3:5-Diethyl-2-*n*-propylpyridine, and its salts, A., 628.
- 2:2'-Diethyl-4:5:4':5'-tetraethoxyselenatricarbocyanine iodide, production of, (P.), B., 526.
- 2:2'-Diethyl-4:5:4':5'-tetraethoxythiatricarbocyanine iodide, production of, (P.), B., 526.
- 3:6-Diethyl-1:2:3:4-tetrahydrocarbazole, A., 990.
- 2:2'-Diethyl-4:5:4':5'-tetramethoxythiadicarbocyanine iodide, production of, (P.), B., 526.
- 2:2'-Diethyl-4:5:4':5'-tetramethoxythiatricarbocyanine iodide, production of, (P.), B., 526.
- Diethylthapsin, A., 91.
- 2:2'-Diethylthia-1-cyanine iodide, A., 224.
- Diethylthiocarbamic acid, sodium salt, determination of zinc with, B., 752.
- 2:2'-Diethylthiocyanine iodide, (P.), B., 842.
- s*-Diethylthioethane, manufacture of, (P.), B., 621.
- pp'*-Diethylthiolarsenobenzene, A., 228.
- Diethylvinylethynylcarbinol, manufacture of, (P.), B., 347.
- Diffusion, B., 705.
- study of, A., 931.
- equation for, and molecular velocity, A., 1313.
- theory of, in cell models, A., 1023.
- in concentration cells, A., 584.
- in relation to cryolysis and particle size, A., 932.
- of compounds of high mol. wt., A., 1072.
- of elements in solid state, A., 24.
- of gases, A., 692.
- of mixed gases, A., 575.
- of volatile materials into inert gases, A., 695.
- anomalous, A., 25.
- in true solutions, A., 928.
- Diffusion coefficients of ions and molecules, A., 702.
- "Diffusion effect" on ionic distribution, A., 699.
- Diffusion rosettes, effect of acids and alkalis on, 1321.
- 3-Diformanilidomethyleneoxindole, A., 758.
- Di-2:2'-furfuryl ether 5:5'-dialdehyde, derivatives of, A., 756.
- Di(furfurylideneacrylidene)creatinine, and its picrate, A., 352.
- Difurfurylideneacreatinine, and its picrate, A., 352.
- Difurfurylidene-methylcreatinine, and its picrate, A., 352.
- 2:3:4:6-Difurfurylidene- α -methylmannoside, A., 847.
- Difurylchloroarsine, A., 997.
- Digesters, circulation of liquors and vapours in, (P.), B., 1077.
- horizontal rotary, B., 705.
- pressure, prevention of seepage through linings of, B., 785.
- Digestion of foods, A., 114.
- peptic, effect of mucin and mucinoids on, A., 1025.
- Digilamid, toxicity and absorption of, A., 1411.
- Digitalinum, clinical study of, A., 655.
- Digitalis, chemistry of, A., 69.
- glucosides from, A., 88, 655, 735, 1226, 1355.
- adsorption of, in presence or absence of proteins, A., 527.
- combination of, with blood-proteins, A., 527.
- capillary activity of, and their influence on membrane permeability, A., 627.
- sapogenins of, A., 1130.
- leaves, glucosidases of, A., 1416.
- Digitalis substances, detection of, colorimetrically, A., 527.
- tinctures, stability of, B., 45.
- toxicity of standard preparations of, A., 396.
- effect of caffeine and theobromine on toxicity of, A., 780.
- Java, B., 523.
- Oregon, potency of, A., 1158.
- Spanish, B., 380.
- assay of preparations of, in the tropics, A., 1158.
- assay and deterioration of, B., 877.
- bio-assay of, A., 780, 1158.
- Digitalis alkaloids, pharmacology and chemistry of, A., 117.
- Digitalis purpurea*, digitoxin content of, A., 673.
- glucosides of, A., 330.
- Digitalis thapsi*, isolation of thapsin from, A., 91.
- Digitalose, configuration of, A., 200.
- Digitogenin, conversion of, into an identical derivative, A., 986.
- Digitonin, reaction of, with sterol derivatives, A., 616.
- poisoning by. See under Poisoning.
- Digtoxandiacid, A., 88.
- and its dimethyl ester, A., 497.
- Digtoxonandiacid, A., 88, 497.
- Digtoxinigenin, degradation of lactone side-chain of, A., 88.
- Digitoxin, potency of, A., 527.
- effect of, on oxidation in tissues, A., 527.
- determination of, colorimetrically, by reaction with vanillin, A., 69.
- Diglycerides, mono-acid, A., 1481.
- Diglycerides-glyceroxides, A., 1145.
- Diglycyl-*l*-leucylglycine, A., 1416.
- iso*Digoxigenic acid, and its pyridine salt and methyl ester, A., 1355.
- Digoxigenin, constitution of, A., 1355.
- iso*Digoxigenin, derivatives of, A., 1355.
- Digoxigenone, and its derivatives, A., 1355.
- iso*Digoxigenonic acid, methyl ester, A., 1355.
- iso*Digoxigenic acid, and its methyl ester, A., 1355.
- Digoxin, clinical study of, A., 655.
- Diguanyleystamine, and its picrate, A., 1266.
- [1,2,2]-Dicycloheptane, 1:2-*di*amino-, and its derivatives, A., 219.
- Diheptylquinol, A., 740.
- Di-(*trans*-hexahydro- β -hydrindyl) ether, A., 971.
- Di- $\Delta^{1:1'}$ -cyclohexene, A., 1244.
- Di- Δ^2 -hexenyl ether, A., 796.
- s*-Di- Δ^1 -cyclohexenylacetone, and its semicarbazone, A., 1107.
- 4-Di- Δ^2 -cyclohexenylamino-1-phenyl-2:3-dimethyl-5-pyrazolone, (P.), B., 974.
- Dihexenylpyrogallols, A., 1362.
- Dicyclohexyl sulphide, and its methiodide, A., 1349.
- ϵ -Dihexylaminopent- α -en- γ -inene, A., 1480.
- 1-Dicyclohexylidene-2-ketogulonic acid, manufacture of, (P.), B., 1165.
- Dicyclohexyl ketone, reaction of, with ethyl nitrite, A., 1481.
- 1:2-Dicyclohexyl-3-methyl-5-pyrazolone, and its 4-methylamino-, -dimethylamino-, and -amino-derivatives, (P.), B., 974.
- Dihomoveratrylamine, and its diacetyl derivative, A., 1498.
- m*-Dihydrazinobenzene hydrochloride, preparation of, from *m*-phenylenediamine, A., 482.
- Di-(β -hydrindyl)amine, A., 971.
- Dihydroacridine, hydroxy-*N'*-cyano-, and its ether, A., 93.

- 9:10-Dihydroacridine, 2-amino-, A., 637.
3-amino-, A., 638.
Dihydroalkannin tetraacetate, A., 217.
Dihydroandrosterone, A., 414.
1:4-Dihydroanthracene, 2:6-dichloro-9:10-dihydroxy-, and quinhydrone therefrom, (P.), B., 622.
diacetate, (P.), B., 622.
2:7-dichloro-9:10-dihydroxy-, and quinhydrone therefrom, (P.), B., 622.
9:10-Dihydroanthracene nucleus, formation of, A., 79.
Dihydroanthraquinol dibenzoate, synthesis of, A., 487.
1:4-Dihydroanthraquinone, 2:6- and 2:7-dichloro-, (P.), B., 622.
2:3-Dihydro-4:9-anthraquinone, dibromo-, and trichloro-1-hydroxy-, and their acetyl derivatives, A., 218.
 $\alpha\beta$ -endo-9:10-Dihydroanthraquinyl-9:10- β -phenylpropionic acid, A., 1235.
 $\alpha\beta$ -endo-9:10-Dihydroanthraquinyl-9:10-propionic acid, A., 1235.
N-Dihydroanthroneazine, and its reaction with glycerol and sulphuric acid, A., 95.
Dihydroarabinal, A., 1354.
Dihydroartemismic acid, derivatives of, A., 218.
1:2-Dihydro-3:4-benzacridone, A., 628.
1:2-Dihydrobenzene. See $\Delta^{1,3}$ -cyclohexadiene.
Dihydrobisanthrohydro- β -carotene, A., 612.
Dihydrobrucidine methiodide, dimethiodide and methosulphate, A., 1389.
Dihydrobrucinolones, A., 1389.
Dihydrobutadienequinone, and its dioxime, A., 863.
Dihydrocarbostyryl, N-amino-, benzoyl derivative, A., 93.
Dihydro- β -caryophyllene, A., 90.
Dihydroisochlorin- e_4 , and its derivatives, A., 1383.
2-Dihydrochlorin- e_6 , 2- α -hydroxy-, trimethyl ester, A., 1135.
Dihydrocholesterol, balance of, in rats, A., 653.
Dihydrocinchonidine, α - and α' -chloro-, and their salts, A., 1256.
Dihydrocinchonine, α - and α' -chloro-, and their salts, A., 1256.
1:4-Dihydrocinchophen. See 2-Phenyl-1:4-dihydroquinoline-4-carboxylic acid.
Dihydroallo- ψ -codeines, and their salts, A., 99.
Dihydro- ψ -codeine- A methyl ester, and its perchlorate, A., 505.
Dihydro- ψ -codeine- C methyl ether, and its salts, A., 505.
Dihydrocodeinone, pharmacology of, A., 245.
Dihydrocuscatalin, A., 1551.
Dihydrode-N-dimethylaphyllidine, and its salts, A., 227.
Dihydrode-N-dimethylsamarandine, hydroxy-, and its derivatives, A., 98.
Dihydrode-N-dimethylsamarandone, hydroxy-, and its hydriodide, A., 98.
Dihydrode-N-methylaphyllidine, and its methiodide, A., 227.
Dihydrode-N-methylheliotridane, and its salts, A., 1255.
Dihydrode-N-methyl- β -tetrahydrodeoxycodeines, A., 1138.
Dihydrodeoxydeguelin, A., 221.
Dihydrodeoxymorphine- D , and its salts, production of, (P.), B., 974.
Dihydrodeoxyvasicine, and its picrate, A., 365.
9:10-Dihydro-9:10-diarylphenanthrenes, 9:10-dihydroxy-, A., 973.
Dihydrodigoxigenin, derivatives of, A., 1355.
4:5-Dihydro-4:5-dimethoxyfurfuraldehyde dimethylacetal, A., 604.
4:5-Dihydro-4:5-dimethoxyfurfuryl alcohol, A., 604.
1:4-Dihydro-1:2:3:4-dicyclopentenanthraquinyl diacetate, A., 1244.
5:8-Dihydro-5:6:7:8-dicyclopentenonaphthaquinyl diacetate, A., 1244.
 $\beta\beta$ -2:2'-Dihydrodiphenylglutaric acid, di- and tetra-bromo-, A., 353.
Dihydroethylphosphoribide α , 10-hydroxy-, A., 362.
Dihydroflavonol, A., 1128.
epi- β -Dihydrofucosterol, and its acetyl derivative and dibromide, A., 1235.
 α - and β -Dihydrofucosterols, and their acetates, A., 1235.
Dehydrogenase, reversible systems of, A., 658.
alcohol, reversibility of oxidation in presence of, A., 658.
Dihydroglauconic acid, and its methyl ester, A., 1224.
Dihydrohemiphylidine, A., 227.
Dihydrohumulene, amino-, and its salts and acetyl derivative, A., 90.
2:3-Dihydroindolyl-3-acetic acid, and its methyl ester, and their pierates, A., 1352.
Dihydro- β -ionone, derivatives of, (P.), B., 57.
Dihydroketoethoxypyrimidines, and their sodium salts, A., 629.
Dihydroleucoperezone, hydroxy-, and its tetramethyl ether, A., 1501.
 β -Dihydrolysergol, and its derivatives, A., 504, 505.
Dihydromanoenes, and their salts, A., 351.
Dihydromanol, A., 1127.
Dihydro- α -matrinidine, and its salts and derivatives, A., 766.
Dihydronelleic acid, and its derivatives, A., 619.
Dihydro- ζ -methylmorphimethine, and its salicylate, A., 99.
Dihydro- ϵ -methylmorphimethine- A methyl ether, and its salts, A., 505.
Dihydro- ϵ -methylmorphimethine- C methyl ether, A., 505.
Dihydromethylphosphoribide α oxime, A., 362.
Dihydromorphine, pharmacology of, A., 245.
Dihydroisomorphines, and their salts, A., 505.
Dihydromorphinone. See Dilaudid.
4 α -Dihydromuconic acids, A., 196.
 $\gamma\zeta$ -Dihydromuconolactone, β -bromo- and β -chloro- $\gamma\zeta$ -dihydroxy-, A., 731.
5:8-Dihydronaphthalene, 6-chloro-1:4-dihydroxy-, manufacture of, (P.), B., 621.
8:9-Dihydro- lin -naphthatriazole, and its derivatives, A., 761.
5:8-Dihydro-1:4-naphthoquinone, 6-chloro-, manufacture of, (P.), B., 621.
Dihydroperezone, methyl ether of, and hydroxy-, and its tetra-acetyl derivative, A., 1501.
2-Dihydrophosphoribide- α , 2- α -hydroxy-, A., 1135.
3:4-Dihydrophenanthrene-1:2-dicarboxylic anhydride, A., 1358.
Dihydrophenanthrenedicarboxylic anhydrides, A., 1495.
Dihydropleiadene, 1:6-dihydroxy-, and its diallyl ether, A., 1231.
Dihydroprotolichestic acid, reduction of, and its methyl ester, A., 864.
Dihydropterocarbin, and its derivatives, A., 218.
5:6-Dihdropyran, 2-bromo-, A., 220.
Dihydroproabietic acid, A., 218.
2-Dihydropyrophosphoribin- α , 2- α -hydroxy-, and its methyl ester and its derivatives, A., 1135.
3:4-Dihydroquinazoline hydrochloride, A., 760.
Dihydroquinidine, α - and α' -chloro-, and their salts, A., 1256.
Dihydroquinine, α - and α' -chloro-, and their salts, A., 1256.
Dihydroapoquinine hydrogen sulphate, A., 227.
Dihydroapoquinine, hydroxy-, and its salts, A., 1136.
1:2-Dihydroquinoline, 2-hydroxy-1-cyano-, A., 93.
5:8-Dihydroisoquinoline hydrochloride, A., 1509.
Dihydroquinotoxine, γ -hydroxy-, and its derivatives, A., 874, 1137.
Dihydroresorcinol, manufacture of 4-alkyl and 4-alkyl-derivatives of, (P.), B., 606.
Dihydro- α -santalylacetic acid, and its derivatives, A., 756.
Dihydroshikimolactone, A., 1365.
Dihydrostrychninolone, and its hydrate perchlorate, A., 367.
Dihydroallotephrosin, and its acetyl derivative, A., 221.
Dihydrouacils, A., 94.
4:5-Dihydrouic acids, 4:5-dihydroxy-, and their ethers, reaction of, with acetic anhydride, A., 96, 225.
Dihydrovulpinic acid, A., 1238.
Di-indole, constitution of, A., 225.
formation of, from *oo'*-dinitrotolane, A., 1133.
3:17-Diketotiallocholane, A., 346.
6- $\alpha\gamma$ -Diketobutyl-4-pyrone-2-carboxylic acid, and its ethyl ester, and 6- β -bromo-, ethyl ester, A., 733.
Diketocamphane, degradation of, in the animal organism, A., 496.
2:5-Diketocamphanecarboxylic acid, and its salts, manufacture of, (P.), B., 46.
 $\delta\epsilon$ -Diketo- β -carboxy- $\gamma\gamma$ -dimethylheptolic acid, A., 1376.
7:12-Diketocholanic acid, oxidation of, A., 1236.
 β -7:12-Diketocholanic acid, β -3-hydroxy-, and its formation from dehydrocholic acid in toads, A., 1237.
Diketo-compounds, condensation of, with nitromethane, A., 347.
2:2'-Diketo-1:1'-dicyano-1:2:1':2'-tetrahydro-4:4'-diquinolyl, A., 93.
Diketodibenzanthrone, A., 859.
8-17-Diketo-6:17-dihydroparabarine, synthesis of, and its oxime, A., 94.
4:7-Diketo-3:3-di- c -hydroxyphenyl-5:6-benzocycloheptane-1:3-dicarboxylic acid, derivatives of, A., 353.
4:5-Diketo-2:2-di- c -hydroxyphenylcyclopentane-1:3-dicarboxylic acid, derivatives of, A., 353.
2:11-Diketo-6:15-dimethoxy-1:2:9:10:11:18-hexahydrochrysene- α , A., 1492.
2:11-Diketo-5:14-dimethoxy-1:2:9:10:11:18-hexahydrochrysene- b , A., 1492.
 $\alpha\gamma$ -Diketo- $\alpha\gamma$ -diphenylpropan- α -ol. See Dibenzoylcarbinol.
3:7-Diketo-5-ergosterol, A., 487.
 $\beta\epsilon$ -Diketohexane, dihydroxy-, derivatives of, A., 200.

- β -Diketo- $\alpha\alpha\alpha$ -hexaphenylhexane, A., 78.
Diketo-1:3-hydrindene, reaction of, with isatin, A., 222.
2:4-Diketo-8-methylhydrindane, and its derivatives, A., 968.
and its dioxime, A., 1495.
2:4-Diketo-8-methylhydrindane-1-carboxylic acid, ethyl ester, and its semicarbazone, A., 1495.
4:5-Diketo-2-methylcyclopentane-1:2:3-tricarboxylic acid, dimethyl ester, and its derivatives, A., 861.
Diketones, molecular compounds of, with magnesium alcoholate iodides, A., 978.
 α -Diketones, steric hindrance in, A., 979.
action of, on nitromethane, A., 347, 1126.
with periodic acid, A., 1483.
 β -Diketones, ternary compounds of, with ammonia and sugars, A., 1108.
 $\alpha\gamma$ -Diketones, preparation of, by Claisen reaction, A., 198.
alcoholysis of, A., 198.
hydrogenation and hydrogenolysis of, A., 198.
 $\alpha\delta$ -Diketones, synthesis of, A., 352.
unsaturated, reduction of, A., 1499.
 $\alpha\epsilon$ -Diketones, unsymmetrical, reactions of, A., 1377.
1:3-Diketo-4-phenyl-2-*p*-anisyl-1:2:3:4-tetrahydroisoquinoline, 4-hydroxy-, A., 1370.
1:3-Diketo-4-phenyl-2-*p*-dimethylamino-phenyl-1:2:3:4-tetrahydroisoquinoline, 4-hydroxy-, A., 1370.
1:2-Diketo-3-phenylhydrindene, and its derivatives, A., 1369.
 $\alpha\beta$ -Diketo- γ -phenyl- α -mesitylpropane, and its derivatives, A., 970.
Diketopiperazine, hydrolysis of, by hydrochloric acid, A., 587.
6- $\alpha\beta$ -Diketopropylbenzoic acid, 2:5-dihydroxy-, A., 1243.
Diketosuccinic-1-(nitrotolyl)hydrazones, ethyl and ethyl methyl esters, A., 502.
2:6-Diketotetrahydro-*lin-p*-benzodipyrrole, A., 759.
1:2-Diketo-1:2:3:4-tetrahydronaphthalene-4:6-disulphonic acid, and its dioxime, A., 970.
 $\alpha\epsilon$ -Diketo- $\alpha\beta$ -triphenyl- γ -anisyl- $\alpha\beta$ -dibenzoyl- β -phenyl- γ -anisylpropane, and its oxime, A., 216.
 $\alpha\epsilon$ -Diketo- $\alpha\delta$ -triphenyl-*n*-pentane, and its monoxime, A., 622.
Dilactidamides, A., 474, 475.
Dilactidamides, A., 474.
Dilactid-*p*-toluides, A., 475.
Dilactic acids, A., 474, 475.
salts and esters of, A., 475.
*meso*Dilactic acid, A., 474.
Dilactic anhydrides, A., 475.
dl-Dilactimide, metallic derivatives, A., 475.
Dilactyl dichloride, A., 475.
Dilatometers, Bollenrath, A., 839.
magnetic, A., 723.
recording, A., 189.
Dilaudid (*dihydromorphinone*), pharmacology of, A., 245.
action of, and of morphine on small intestine of dogs, A., 528.
Dill apiole, synthesis of, A., 80.
Dimesityl ketones, and their derivatives, A., 862.
 $\alpha\epsilon$ -Dimesityl- $\alpha\epsilon$ -pentanedione, and $\beta\delta$ -dibromo-, A., 862.
 $\beta\beta$ -Dimethoxyalkanes, preparation of α -unsaturated ethers from, A., 606.
3:4-Dimethoxy-5-allylbenzene, 1:2-dihydroxy-, and its 1:2-dimethyl ether, A., 80.
3:4-Dimethoxy- β -amino- α -methoxy-*n*-propylbenzene, hydrochloride, A., 971.
3:5-Dimethoxy-1-*n*-amylbenzene, dibromo-, A., 1234.
4:3':6'-Dimethoxyanilinoanthraquinone-2-sulphonic acid, 1:3:4'-tri-amino-, 8:4'-diacetyl derivative, (P.), B., 895.
4:9-Dimethoxyanthracene, A., 217.
1:5-Dimethoxyanthraquinone, amino- and nitro-derivatives, (P.), B., 219.
1:8-Dimethoxyanthraquinone, amino- and nitro-derivatives, (P.), B., 219.
2:6-Dimethoxyanthraquinone, 1:5-dibromo-, A., 761.
2:4-Dimethoxybenzaldehyde, 5-bromo-, and its phenylhydrazones, A., 616.
3:4-Dimethoxybenzaldehyde, 2-hydroxy-, A., 1128.
2:5-Dimethoxybenzene, *N*-nitro-1:4-di-amino-, (P.), B., 1132.
2:4-Dimethoxybenzoic acid, 2-acetyl- α -naphthyl ester, A., 91.
o-acetylphenyl ester, A., 1129.
2:4-Dimethoxybenzoic acid, 5-bromo-, A., 616.
4:4'-Dimethoxybenzophenone, 5:5'-dinitro-, A., 339.
 β -3:4-Dimethoxybenzoyl- α -3':4'-dimethoxybenzylidenepropionic acid, and its lactone, A., 860.
1:4':5'-Dimethoxybenzoyl-5- α -hydroxy-2'-nitro-4':5'-dimethoxybenzylhydrocotarnine, and its hydrochloride, A., 1513.
 α -3:5-Dimethoxybenzoyl-*n*-valeric acid, ethyl ester, A., 1234.
3':4'-Dimethoxybenzylaminomethylanthydrocotarnine dihydrochloride, A., 767.
3:4-Dimethoxybenzylidene chloride, 2-nitro-, A., 1233.
5:6-Dimethoxybenzylidenecoumaranones, amino- and nitro-, A., 86.
2:3- and 2:5-Dimethoxybenzylideneglycines, barium salts, A., 491.
3:4-Dimethoxybenzylidenepyrvic acid, and its esters and dibromide, A., 490.
3:4-Dimethoxybenzylidenepyrvic acid, β -mono- and β -di-bromo-, and their methyl esters, A., 490.
3:4-Dimethoxy-*N*-benzylnorephedrine, A., 1493.
3-(3:4-Dimethoxybenzyl)-3:4:5:6-tetrahydronorharman hydrochloride, A., 1388.
3-(3:4-Dimethoxybenzyl)-3:4:5:6-tetrahydronorharman-3-carboxylic acid, A., 1388.
6:7-Dimethoxy-1-(6'-bromo-3':4'-dimethoxyphenyl)-3-hydroxymethylnaphthalene-2-carboxylic acid, 4-hydroxy-, A., 861.
6:7-Dimethoxy-1-(6'-bromo-3':4'-dimethoxyphenyl)naphthalene-2-carboxylic acid, 4-hydroxy-, ethyl ester, A., 861.
2:5-Dimethoxybutyl- β -hydroxyethylaniline, manufacture of, (P.), B., 797.
2:5-Dimethoxybutyl- β -sulphatoethylaniline, manufacture of, (P.), B., 797.
6:7-Dimethoxy-2-carboxy-1-(3':4'-dimethoxyphenyl)-1:2:3:4-tetrahydronaphthalene-3-glycollic acid, and its diethyl ester and derivatives, A., 861.
2:4-Dimethoxy-6-carboxyphenylacetic acid, 3-hydroxy-, and its acetyl derivative, A., 620.
3:4-Dimethoxy- α -carboxyphthalide, A., 619.
3:4-Dimethoxy-6- $\beta\beta$ -dichloroethylbenzoic acid, A., 619.
3:5-Dimethoxy-2- $\beta\beta$ -dichloroethylbenzoic acid, 4-hydroxy-, and its acetyl derivative, A., 620.
3:4-Dimethoxy- α -trichloromethylphthalide, A., 619.
3:4-Dimethoxycinnamaldehyde, α :6-di-bromo-, and its semicarbazone, A., 490.
Dimethoxycinnamaldehydes, and their derivatives, A., 1123.
2:4-Dimethoxycinnamic acid, α -amino-, benzoyl derivative, A., 489.
2:6-Dimethoxycinnamic acid, A., 83.
3:4-Dimethoxycinnamic acid, α -mono- and α :6-di-bromo-derivatives, and α -bromo- β -hydroxy-, and their methyl esters, A., 490.
5-chloro-, and its esters, A., 860.
5-nitro-, A., 337.
6-nitro- α -amino-, α -benzoyl derivative, A., 747.
Dimethoxycoumarincarboxylic acid, nitro-, and its methyl ester, A., 627.
5:6-Dimethoxycoumarone, A., 1128.
3:5-Dimethoxycoumarone-1-carboxylic acid, and its methyl ester, A., 1128.
5:6-Dimethoxycoumarone-1-carboxylic acid, A., 1128.
Dimethoxycuscutalin, methyl ester, A., 1551.
Di-*o*-methoxydeoxybenzoin semicarbazone, A., 1234.
4:4'-Dimethoxy-*m*-dibenzoylbenzene, 3:3'-diamino-, and its acetyl derivatives, and 3:3'-dinitro-, A., 753.
4:4'-Dimethoxydibenzoylbenzenes, A., 753.
Di-*o*-methoxydibenzyl, *dl*- α -amino-, and its derivatives, A., 1234.
1:6-Dimethoxydihydropleiadene, A., 1231.
5:6-Dimethoxy-3-(3':4'-dimethoxyphenyl)-hydrindene-2-acetic acid, A., 861.
6:7-Dimethoxy-1-(3':4'-dimethoxyphenyl)-3-hydroxymethylnaphthalenecarboxylic acids, and their lactones, A., 860.
6:7-Dimethoxy-1-(3':4'-dimethoxyphenyl)-3-hydroxymethyl-1:2:3:4-tetrahydronaphthalene-2-carboxylic acid, and its lactone, A., 861.
6:7-Dimethoxy-1-(3':4'-dimethoxyphenyl)-naphthalene, A., 860.
6:7-Dimethoxy-1-(3':4'-dimethoxyphenyl)-naphthalene-2-carboxylic acid, 4-hydroxy-, ethyl ester, A., 861.
6:7-Dimethoxy-1-(3':4'-dimethoxyphenyl)-naphthalene-3-carboxylic acid, and its methyl ester and bromo-derivatives, A., 860.
6:7-Dimethoxy-1-(3':4'-dimethoxyphenyl)-naphthalene-2:3-dicarboxylic acid, and its esters and anhydride, A., 860.
6:7-Dimethoxy-1-(3':4'-dimethoxyphenyl)-1:2:3:4-tetrahydronaphthalene-2-carboxylic acid, and *di*bromo-, A., 861.
3:2'-Dimethoxy-1':4'-dimethylazobenzene, 4-hydroxy-, A., 1489.
Di-(5-methoxy-3:3'-dimethyl-4- β -carbomethoxyethylpyrromethene)methane, A., 633.
2:2'-Dimethoxy-5:5'-dimethylchalcone- α -acetic acid, and its ethyl ester, and their semicarbazones, A., 1366.
Di-[5-methoxy-4:4'-dimethyl-3:3'-di-(β -carboxyethyl)pyrromethene]-methane, and its derivatives, A., 364.
[Di-(5-methoxy-4:4'-dimethyl-3:3'-diethyl)pyrromethene]methane, and its derivatives, A., 364.
Di-(5-methoxy-3:3'-dimethyl-4-ethyl-4- β -carboxyethyl)methane and its derivatives, A., 633.
6:7-Dimethoxy-1:3-dimethylisoquinoline, A., 972.
3:3'-Dimethoxydiphenyl, 5:5'-dicyano-2:2'-dihydroxy-, diacetyl derivative, A., 1237.
4:4'-Dimethoxydiphenyl, 2:2'-diamino-, and 2:2'-dinitro-, A., 1504.
2':4'-Dimethoxydiphenyl-6-carboxylic acid, 2-nitro-, and its cinchonine salt, A., 1364.

- 2:2'-Dimethoxydiphenyl-5:5'-dicarboxylic acid, methyl ester, A., 627.
- 2:7-Dimethoxydiphenylene oxide, A., 1504.
- $\beta\beta$ -2:2'-Dimethoxydiphenylglutaric acid, and its derivatives, A., 353.
- γ -Dimethoxydiphenylhydrogutta-percha, A., 1501.
- 4:4'-Dimethoxydiphenylmethane, nitration of, and 5:5'-dinitro-, A., 339.
- 8:8'-Dimethoxy-2:2'-diphenyl-1:1'-dithio-dichromylene, A., 91.
- 3:4'-Dimethoxydistyryl ketone, A., 85.
- 2:2'-Dimethoxy-3:3'-ditolyl, A., 757.
- 2:2'-Dimethoxy-4:4'-ditolyl, A., 757.
- 6:6'-Dimethoxy-2:2'-ditolyl, A., 757.
- $\beta\beta$ -2:2'-Dimethoxy-5:5'-ditolylglutaric acid, and its copper salt, A., 353.
- 3:5'-Dimethoxyflavylum chloride, 3:6:7:4-tetrahydroxy-, A., 1129.
- 6:4'-Dimethoxyflavylum chloride, A., 1129.
- $\alpha\beta$ -Dimethoxyglutardimethylamide, A., 1485.
- Dimethoxyglutaric acid, hydroxy-, derivatives of, A., 196.
- $\beta\beta$ -Dimethoxyheptane, electric moment of, A., 683.
- 2:5-Dimethoxyhexahydrobenzanilide 4-amino-, and 4-nitro-, production of, (P.), B., 1085.
- 5:14-Dimethoxy-1:2:9:10:11:18-hexahydrochrysene-b, A., 1492.
- 6:15-Dimethoxy-1:2:9:10:11:18-hexahydrochrysene-a, A., 1492.
- 5:6-Dimethoxyhomophthalo- β -piperonyl-ethylamic acid, A., 767.
- 5:6-Dimethoxyhomophthalo- β -piperonyl-ethylimide, A., 767.
- 5:3-Dimethoxyhomophthalo- β -veratryl-ethylamic acid, and its methyl ester, A., 767.
- 5:6-Dimethoxyhomophthalo- β -veratryl-ethylimide, A., 767.
- 3:4-Dimethoxy-N-homoveratrylnorephedrine, A., 1493.
- Di-o-methoxyhydrobenzoin anhydride, A., 1234.
- Di-m-methoxyhydrobenzoin $\alpha\alpha'$ -dimethyl ether, A., 1496.
- 4:5-Dimethoxy-2-methoxymethoxybenzaldehyde, and its lactone, A., 83.
- $\alpha\alpha$ -Dimethoxy- α -2-methoxyphenylethane, β -nitro-, A., 616.
- 2:6-Dimethoxy-7-methylpurine, A., 1133.
- 2:4'-Dimethoxy- α -naphthylflavone, A., 91.
- 3:4-Dimethoxy- β -nitro- α -methoxy-n-propylbenzene, A., 971.
- $\gamma\gamma$ -Dimethoxyoctane, A., 1480.
- 3:11-Dimethoxyoxyprotoberberine, synthesis of, A., 767.
- 3:5-Dimethoxypentadecylbenzene, A., 615.
- Dimethoxyperylene-3:4:9:10-tetracarboxylic acid, di-imides of, A., 758.
- 3:4-Dimethoxyphenacyl chloride, 2-hydroxy-, A., 86.
- 9:10-Dimethoxyphenanthrene, 2-nitro-, A., 1372.
- 2:5- and 2:7-Dimethoxyphenanthrenes, and their picrates, A., 1497.
- 2:5- and 2:7-Dimethoxyphenanthrene-9-carboxylic acids, A., 1497.
- 2:7-Dimethoxyphenazone, A., 1504.
- 4:5-Dimethoxyphenoxycetic acid-2-(2':4'-O-dimethylphloroacetophenone, A., 868.
- 4:5-Dimethoxyphenoxycetic acid-2-phloroacetophenone, A., 868.
- Di-o-methoxyphenylacetaldehyde semicarbazone, A., 1234.
- 3:4-Dimethoxyphenylacetic acid, 6-nitro-, A., 747.
- 3:5-Dimethoxyphenylacetic acid, 4-hydroxy-, synthesis of, A., 343.
- 4:5-Dimethoxyphenylacetic acid, 2-hydroxy-, A., 83.
- 2:4-Dimethoxyphenylacetone, A., 744.
- $\beta\gamma$ -Di-3-methoxyphenyladipic acid-a, and its methyl ester, A., 1492.
- 6:7-Dimethoxy-2-phenyl-3:4-dihydronaphthyl-1-acetic acid, ethyl ester, A., 1495.
- 4-(3':4'-Dimethoxyphenyl)-2:6-dimethyl-1:4-dihydropyridine-3:5-dicarboxylic acid, and its 4-nitro-derivatives, ethyl esters, A., 989.
- α -2:4-Dimethoxyphenylethane, $\alpha\beta$ -dibromo- β -nitro- α -5-bromo-, A., 616.
- α -3:4-Dimethoxyphenylethane, $\alpha\beta$ -dibromo- β -nitro-, A., 616.
- β -2:4-Dimethoxyphenylethylalcohol, A., 745.
- α -3:4-Dimethoxyphenylethyl oxalate, β -amino-, A., 616.
- β -3:4-Dimethoxyphenylethylamine, 5-amino-, and its derivatives, A., 337.
- α -2:4-Dimethoxyphenylethylene, β -bromo- β -nitro- α -5-bromo-, A., 616.
- α -3:4-Dimethoxyphenylethylene, β -bromo- β -nitro-, A., 616.
- cis*- $\alpha\beta$ -Di-o-methoxyphenylethylethylene oxide, A., 1234.
- 5:7-Dimethoxy-4-phenylflavylum picrate, 6-hydroxy-, A., 1130.
- 3:5'-Dimethoxyphenyl-2-glyoxalidylcarbinol hydrochloride, (P.), B., 287.
- iso*Di-o-methoxyphenylhydroxyethylamines, and their derivatives, A., 1234.
- dl*-*iso*Di-o-methoxyphenylhydroxyethyltrimethylammonium iodide, A., 1234.
- 1-Di-o-methoxyphenylhydroxylamine hydrogen *d*-tartrate, A., 1234.
- 3:4-Dimethoxyphenyl β -hydroxy- β -nitro-phenylethyl ketones, 2-hydroxy-, A., 86.
- β -3:4-Dimethoxyphenyl- β -methoxyethyl-gallamide trimethyl and triethyl ethers, (P.), B., 478.
- β -3:4-Dimethoxyphenyl methyl ketone, β -hydroxy-, A., 981.
- 3:4-Dimethoxyphenyl nitrostyryl ketones, 2-hydroxy-, and their acetyl derivatives, A., 86.
- α -3:4-Dimethoxyphenylpropan- α -ol, β -amino-, and its derivatives, A., 972.
- β -2:4-Dimethoxyphenylpropionic acid, α -amino-, and its phenylethane, A., 489.
- β -3:4-Dimethoxyphenylpropionic acid, methyl ester, A., 1492.
- γ -3:4-Dimethoxyphenylpropionic acid, $\alpha\beta$ -6-tribromo-, A., 490.
- α -3:4-Dimethoxyphenylpropyl acetate, β -amino-, and β -hydroxylamino-, hydrochlorides, and β -nitro-, A., 972.
- 3:5-Dimethoxyphenyl tetradecenyl ketone, A., 615.
- $\beta\beta$ -Dimethoxypropane, $\alpha\gamma$ -dibromo-, $\alpha\gamma$ -dichloro-, A., 1353.
- 3:4-Dimethoxypropionophenone oxime, A., 971.
- 2:5-Dimethoxy-6-n-propylbenzaldehyde, 3-hydroxy-, A., 491.
- 3:5-Dimethoxy-n-propylbenzene, 4-hydroxy-, and its sodium salt and esters, A., 491.
- 2:4-Dimethoxy-6-n-propylbenzoyl chloride, A., 491.
- 2:4-Dimethoxy-6-propylbenzylideneaniline, 3-hydroxy-, methiodide, A., 978.
- 4:8-Dimethoxyquinacridone, A., 992.
- 2:4-Dimethoxystyrene, 5-bromo- ω -nitro-, A., 616.
- 3:4-Dimethoxystyrene, α -mono- and 3:4-dibromo-, A., 490.
- 5: ω -di-nitro-, A., 337.
- 7:4'-Dimethoxy-2-styrylchromone, A., 90.
- 4:6-Di-(3'-methoxystyryl)-*m*-dinitrobenzene, 4:6-di-(4'-hydroxy-), A., 619.
- 2:3:4-Dimethoxystyryl-4-quinazoline, A., 760.
- 6:7-Dimethoxytetrahydroisoquinolylcarbamide, A., 1155.
- $\alpha\alpha$ -Dimethoxy- $\alpha\alpha\alpha\alpha$ -tetraphenyl- $\gamma\gamma$ -dimethylpentane, A., 203.
- $\alpha\alpha$ -Dimethoxy- $\alpha\alpha\alpha\alpha$ -tetraphenylpentane, A., 203.
- $\alpha\gamma$ -Dimethoxy- $\alpha\alpha\gamma\gamma$ -tetraphenylpropane, A., 203.
- 3:4-Dimethoxytoluene, 2-amino-, and its derivatives, and 2-cyano-, A., 1233.
- $\beta\beta$ -6:6'-Dimethoxy-*m*-tolylglutaric acid, A., 1366.
- 6:7-Dimethoxy-3:4':5'-triethoxy-1-phenylisoquinoline, and its hydrochloride, (P.), B., 478.
- 4:4''-Dimethoxytriphenylacetic acid, 2:4-dihydroxy-, (2-)lactone, A., 80.
- Dimethoxyvaleric acid, and its lactone, A., 1480.
- Dimethoxyvaleronitrile, A., 1480.
- 3:5-Dimethoxyvalerophenone, and its semicarbazone, A., 1234.
- 3:4-Dimethoxy- β -veratrylideneamino- α -hydroxy-n-propylbenzene, A., 972.
- 6:7-Dimethoxy-2-veratrylquinazoline, A., 1134.
- Dimethyl ether. See Methyl ether.
- diselenide, A., 959.
- trisulphide, Raman spectrum of, A., 681.
- ditelluride, and its use in identification of methyl groups, A., 62.
- thiosulphites, isomeric, A., 326.
- Dimethylacetylene, Raman effect of, A., 146.
- physical constants of, A., 470.
- $\beta\beta$ -Dimethylacrylic acid, α -amino-, benzoyl derivative, A., 756.
- Dimethylallene, asymmetric, isomerisation of, in presence of floridin, A., 62.
- 6:7-Dimethylalloxazine, A., 94.
- formation of, by irradiation of lactoflavin, A., 224.
- Dimethylallylarsonium picrate, hydroxy-, A., 738.
- Nc*-Dimethyl-*c*-allylbarbituric acid, manufacture of, (P.), B., 1165.
- 2:4-Di- β -methylallyl-*m*-cresol, A., 483.
- 3:5-Di- β -methylallylcresols, A., 483.
- 2:6-Di- β -methylallylphenol, A., 483.
- 4:6-Di- β -methylallylresorcinol, A., 483.
- Dimethylamine, manufacture of, (P.), B., 262.
- m.p. of, A., 815.
- m.p. and vapour pressure of, A., 574.
- vapour pressure curve of, A., 290.
- reaction of, with epichlorohydrin, A., 202.
- Dimethylaminoaceto-*o*-toluidide and its hydrochloride, A., 1386.
- 9-Dimethylaminoacetyl-1:2:3:4:5:6:7:8-octahydrophenanthrene, and its salts, A., 973.
- γ -Dimethylaminoisooamyl chloride, A., 874.
- γ -Dimethylaminoisooamylhydrocupreine, and its trisulphate, A., 874.
- m*- and *p*-Dimethylaminoanillocamphors, A., 1127.
- Dimethylaminoanthraquinones, 2-chloro-, A., 87.
- 2-Dimethylaminoanthraquinonesulphonic acids, sodium salts, A., 87.
- Dimethylaminoantipyrine, incompatibility of, B., 828.
- p*-Dimethylaminobenzaldehyde *m*-nitrobenzhydrazide, and 2:4-dinitrophenylhydrazone, A., 743.
- phenylhydrazone-*p*-sulphonic acid hydrate, A., 491.

- β -*p*-Dimethylaminobenzoin, reaction of, with alcoholic hydrogen chloride, A., 862.
oxime, A., 862.
- Dimethylaminobenzophenone oxime, transformation of, and 3-bromo-, and 3:3:5'-trinitro-, A., 345.
- p*-Dimethylaminobenzophenone perchlorate, A., 1124.
- 1-Dimethylaminobenzthiazole, hydrodibromide, and 5-bromo-, and its hydro-tetrabromide, A., 503.
- β -Dimethylamino- α -benzylethyl ethyl ether, A., 81.
- p*-Dimethylaminobenzylideneaminoxanthone, A., 497.
- α -Dimethylaminobutane, γ -amino-, and γ -chloro-, and their salts, A., 478.
- α -Dimethylaminobutylene, and its derivatives, A., 478.
- β -Dimethylamino- α -dibenzoyl- Δ^4 -hexene, and its methiodide, A., 874.
- 4:4'-Dimethylamino-3:3'-dimethylbenzophenonebenzoylimine. See Benzoylauramine G.
- N*- γ -Dimethylamino- β - β -dimethyl-*n*-propylaniline, A., 482.
- N*- γ -Dimethylamino- β - β -dimethyl-*n*-propyl-*o*-anisidine, and its salts, A., 482.
- N*- γ -Dimethylamino- β - β -dimethyl-*n*-propylbenzylamine, A., 482.
- N*- γ -Dimethylamino- β - β -dimethyl-*n*-propyl- β -phenylethylamine, and its dipicrate, A., 482.
- 3-Dimethylaminodiphenyl, and its derivatives, A., 76.
- Dimethylaminoepihydrin, polymeride of, A., 202.
- β -(β -Dimethylaminoethoxy)ethyl alcohol, and its esters, A., 1363.
- β -Dimethylaminoethoxyphenols, hydrochlorides of, A., 1361.
- β -Dimethylaminoethyl chloride, and its hydrochloride, A., 874.
 α -methoxypropionate, A., 730.
- 1:3-Dimethyl-3- β -aminoethylidihydroindole, and its picrate and dipicrate, A., 636.
- β -Dimethylaminoethylglyoxaline, and its hydrochloride and picrate, (P.), B., 830.
- 4(5)- β -Dimethylaminoethylglyoxaline salts, A., 759.
- β -Dimethylaminoethylhydrocupreine, A., 874.
- 1:3-Dimethyl-3- β -aminoethylloxindole, and its picrate and benzylidene derivative, A., 635, 636.
- 1-Dimethylaminogentiobiose heptaacetate, A., 330.
- π -Dimethylaminoheptadecic acid, methyl ester, and its salts, A., 479.
- α -Dimethylamino- γ - β -hydroxyethylaminobutane, and its hydrochloride, A., 478.
- 9- β -Dimethylamino- α -hydroxyethyl-1:2:3:4:5:6:7:8-octahydrophenanthrene, and its salts, A., 973.
- 4-Dimethylamino- α -hydroxymethyl- α - and - β -deoxybenzoins, and their derivatives, A., 622.
- γ -Dimethylamino- β -hydroxypropanesulphonic acid, A., 1111.
- 9- β -Dimethylamino- α -hydroxy-*n*-propyl-1:2:3:4:5:6:7:8-octahydrophenanthrene, and its salts, A., 973.
- p*-Dimethylamino-*p*'-methoxybenzophenone perchlorate, A., 1124.
- 2-Dimethylamino-5-methylbenzophenone, and nitro-, A., 1241.
- 4-Dimethylamino-2- and -3-methylbenzophenones, and their derivatives, A., 1241.
- 1-Dimethylamino-5-methylbenzthiazole, hydrodibromide of, and 3-bromo-, and its hydro-tetrabromide, A., 503.
- N*-(β -Dimethylaminomethyl-*n*-butyl)-*o*-anisidine, and its dipicrate, A., 482.
- 2'-Dimethylamino-5'-methylidiphenyl sulphide, 2-nitro-, A., 485.
- α -Dimethylamino- γ -methyl-*n*-hexan- ϵ -one, and its semicarbazone hydrochloride, A., 478.
- 2-(Dimethylaminomethyl)indole, and its salts, A., 1386.
- γ -Dimethylamino- α -methylpropionitrile, and its hydrochloride, A., 478.
- γ -Dimethylamino- α -methyl-*n*-propylacetoacetic acid, ethyl ester, A., 478.
- γ -Dimethylamino- α -methyl-*n*-propylmalonic acid, ethyl ester, A., 478.
- ζ -Dimethylaminopentadecic acid, methyl ester, and its salts, A., 479.
- ϵ -Dimethylamino- Δ^4 -pentadiene, γ -chloro-, A., 1480.
- α -Dimethylaminopentan- β -ol, and its methiodide, A., 193.
- ϵ -Dimethylaminopent- α -en- γ -inene, and its derivatives, A., 1480.
- 5- γ -Dimethylaminophenylacridine, chloro-derivatives, A., 1251.
- 4-Dimethylamino- β -phenylethylcarbamide, A., 1155.
- 2-*p*-Dimethylaminophenylindazole 1-oxide, 4:6-dinitro-3-hydroxy-, and its hydrochloride, A., 502.
- 4-*p*-Dimethylaminophenyl-2:3-indeno-(3':2')-chromylium chloride hydrochloride, 7-hydroxy-, A., 1130.
- 4-Dimethylamino-1-phenyl-1:4:5:6-tetrahydropyridazin-6-one, and its methiodide, A., 991.
- α - and β -Di(methylamino)platinic chlorides, A., 1229.
- α - and β -Di(methylamino)platinous bromides and chlorides, A., 1229.
- β -Dimethylaminopropion- α -toluidide, and its hydrochloride, A., 1386.
- 9- α -Dimethylaminopropionyl-1:2:3:4:5:6:7:8-octahydrophenanthrene, and its salts, A., 973.
- 1- γ -Dimethylamino-*n*-propyldibenzfuran, and its salts, A., 872.
- 3- γ -Dimethylamino-*n*-propyldibenzfuran salts, A., 872.
- 3-Dimethylaminopyridine, and its dihydrochloride, A., 498.
- 2-Dimethylaminopyridine-5-phosphinic acid, A., 368.
- 2-Dimethylaminopyridine-5-phosphinous acid, A., 368.
- 2:4-Dimethylaminoquinazoline, and its salts, A., 991.
- p*-Dimethylaminostyryl methyl ketone borofluorides and silicofluorides, A., 1124.
- α -Dimethylamino- ϵ - γ -tolylthiol- Δ^8 -pentinene, A., 1480.
- Dimethylammonium stannichloride, crystal structure of, A., 286.
- 6:7-Dimethyl-9-*n*-amylflavin, synthesis of, A., 94.
- 3:17-Dimethylandrostande, 3:17-dihydroxy-, A., 1125.
- Dimethylaniline, rearrangement of, A., 76.
- 4:5-Dimethylanilinoacetic acid, 2-nitro-, A., 503.
- 2-*p*-Dimethylanilino-3-carbethoxyindazole, and its hydrochloride and 1-oxide, A., 991.
- 2-*p*-Dimethylanilino-3-chloroindazole 1-oxide, A., 991.
- 1:5-Dimethylantracene, and its derivatives, A., 205.
- N*-Dimethylantranilic acid, and its methyl ester, dielectric constants and apparent molal volume of, A., 1447.
- 1:4-Dimethylantranlylpropionic acid, A., 1235.
- 1:2-Dimethylantraquinone, 3-chloro-, (P.), B., 622.
- 2:3-Dimethylantraquinone, 1-amino-, manufacture of, (P.), B., 263, 941.
5:6:7:8-tetrachloro-, A., 859.
- 2:3-Dimethylanthranylidenedipropionic acid, A., 1235.
- 1:4-Dimethylanthranylpropionic acid, A., 1235.
- 2:3-Dimethyl-*l*-arabinomethylose, A., 470.
- 6:7-Dimethyl-9-*d*-1'-arabitylisoalloxazine, A., 1134.
tetraacetate, A., 631.
- 6:7-Dimethyl-9-*l*-1'-arabitylisoalloxazine tetraacetate, A., 760.
- 2:6-Dimethyl-1-*l*-arabitylbenziminazole, A., 359.
- 6:7-Dimethyl-9-*l*-1'-arabo-isoalloxazine, A., 359.
- 6:7-Dimethyl-9-*l*-araboflavin, A., 358, 761.
- 6:7-Dimethyl-9-araboflavins, and their tetraacetates, A., 1134.
- 2:3-Dimethylazobenzene-4'-carbamic acid, cholesteryl ester, A., 210.
- 4:4'-Dimethylazoxybenzene-3:3'-diazo-*p*-hydroxynaphthoic anilide, B., 988.
- 2:2'-Dimethyl-3:4:3':4'-benzbenzthiacyanine, *p*-toluenesulphonate, (P.), B., 842.
- 2:4-Dimethylbenzoic acid, 5-bromo-, A., 746.
- 2:4-Dimethylbenzonitrile, 5-bromo-, A., 746.
- Di-(2-methyl-5-benzoxazolyl)-methane, A., 339.
- 2:2':4'- and -2':5'-Dimethylbenzoylbenzoic acids, and their methyl esters, A., 1372.
- 2:2':4'- and -2':5'-Dimethylbenzoyl-4:5-dimethyl- Δ^1 -tetrahydrobenzoic acids, A., 1372.
- 6:2':4'-Dimethylbenzoyl-1:2:3:4-tetrahydronaphthalene, A., 335.
- 1:2-Dimethyl-1:2:3-benzotriazolium salts, A., 360.
- NN'*-Di-*p*-methylbenzylpiperazine, A., 1508.
- Dimethylbis- β -5-ethoxy-3-indolyethylammonium bromide and picrate, A., 1379.
- 1:3-Dimethyl-3- β -bromoethylloxindole, A., 636.
- 3:3'-Dimethyl-5:5'-dibromomethyl-4:4'-dibutylpyrromethene hydrobromide, A., 363.
- β - γ -Dimethylbutadiene, additive reactions and polymerisation of, A., 470.
reaction of, with sulphur dichloride, A., 325.
- β - γ -Dimethyl- Δ^4 - γ -butadiene, addition of, to alkannin methyl ether, A., 1253.
- cis*- β - γ -Dimethylbutadiene *ad*-dibromide, A., 470.
- Dimethylbutadienesulphone, A., 604.
- 2:3-Dimethylbutadiene-*p*-xyloquinone, and its semicarbazone, A., 1372.
- β - γ -Dimethylbutane, *d*- α -bromo-, A., 1482.
- 3:3-Dimethylcyclobutane-1:2-dicarboxylic acid, A., 976.
- d*-*cis*-3:3-Dimethylcyclobutane-1:2-dicarboxylic acid, A., 489.
- d*- β -Dimethylbutan- α -ol, and its acetate, A., 1482.
- β - γ -Dimethyl- Δ^8 -butenyl acetate, δ -hydroxy-, A., 470.
- NC*-Dimethyl-*c*-*n*-butylbarbituric acid, production of, (P.), B., 1165.
- 1:3-Dimethyl-5-*tert*-butylbenzene, dipole moment of, A., 684.

- 3:3-Dimethyl- Δ^1 -cyclobutylene-1:2-dicarboxylic acid, A., 90, 489, 976.
 $\beta\gamma$ -Dimethyl- Δ^8 -butylene- $\alpha\delta$ -diol, A., 470.
 2:4-Dimethyl-3-butylpyrrole, A., 362.
 $\beta\beta$ -Dimethylbutyric acids, α -bromo-, and their chlorides, A., 71.
 1- $\alpha\alpha$ -Dimethylbutyrylpiperidine, β -hydroxy-, A., 71.
 Dimethylcarbamidoglycollic acid, ammonium salt, A., 96.
 Dimethylcarbamylcholine chloride methochloride, and its auric chloride compound, A., 1228.
 2:2'-Dimethyl-1:1'-carbocyanine *p*-toluenesulphonate, (P.), B., 842.
 2:2'-Dimethylcarbocyanine bromide, (P.), B., 842.
p-toluenesulphonate, (P.), B., 843.
 5:5'-Dimethylcarbocyanine *p*-toluenesulphonate, (P.), B., 843.
 3:3'-Dimethyl-4- β -carboxyethylpyrromethene, 5-bromo-, hydrobromide, and its derivatives, A., 633.
 2:4-Dimethyl-3-carboxypyrazolinylpyrrole, A., 994.
 16:20-Dimethylcholanthrene, and its picrate, A., 1117.
 2:11-Dimethylchrysene, and its derivatives, A., 1492.
 3:4-Dimethylcoumarin, 6-chloro-7-hydroxy-, and 8-nitro-7-hydroxy-, and their acetyl derivatives, A., 1504.
 3:4-Dimethylisocoumarin, A., 980.
 Dimethylcoumarins, A., 353.
 4:7-Dimethylcoumarin-3-acetic acid, 5-hydroxy-, ethyl ester, A., 1503.
 1:2'-Dimethyl-2:1'-cyanine iodide, A., 224.
 Dimethyldecahydronaphthalenes, A., 335.
 $\gamma\delta$ -Dimethyl- Δ^{10} -decapentaene- $\alpha\kappa$ -dicarboxylic acid, and its dimethyl ester, A., 612.
 6:7-Dimethyl-9- δ -1'-deoxyribitylisoalloxazine, A., 1510.
 Dimethyldiacridene, A., 1254.
 Dimethyldiacridylum salts, chemiluminescence of, A., 281.
N,N'-Dimethyldiacridylum bromide, A., 1254.
 2:2'-Dimethyl-5:6:5':6'-dibenz-7:7'-endodimethenyliothiocarbocyanine *p*-toluenesulphonate, (P.), B., 842.
 2:2'-Dimethyl-5:6:5':6'-dibenz-7:7'-*o*-phenylenethiocarbocyanine bromide, (P.), B., 842.
 4:4'-Dimethyl-3:3'-dibutylpyrromethene, 5:5'-dibromo-, and its hydrobromide, A., 363.
N,N'-Dimethyl-*S*-dicarbamylcarbamide, A., 96.
 4:4'-Dimethyl-3:3'-di-(β -carbomethoxyethyl)pyrromethene, 5:5'-dibromo-, hydrochloride, and 5-hydroxy-, and its derivatives, A., 363.
 2:4-Dimethyl-3- $\alpha\beta$ -dicarboxyethylpyrro-*p*-dimethylaminophenylmethene perchlorate, A., 363.
 2:4-Dimethyl-3- $\alpha\beta$ -dicarboxyethylpyrrole, A., 363.
 3:3'-Dimethyl-4:4'-di-(β -carboxyethyl)pyrromethene, 5-bromo-, hydrobromide, and its derivatives, A., 633.
 5:5'-dibromo-, derivatives of, A., 364.
 3:5'-Dimethyl-3:4'-diethylpyrromethene, and 4:5-dibromo-, hydrobromides of, A., 1134.
 4:4'-Dimethyl-3:3'-diethylpyrromethene, 5-hydroxy-, A., 364.
 4:5'-Dimethyl-3:4'-diethylpyrromethene, 5:3'-dibromo-, hydrobromide, A., 1135.
 Dimethyldigitoxiside, methyl ester, A., 1485.
 1:9-Dimethylspirodihydantoin, acetylation and ethylation of, A., 225.
 1:1-Dimethyl-1:2-dihydrobenzofuran, and 4-chloro-, A., 484.
 Dimethyl-1:2-dihydrobenzofurans, A., 484.
N,N'-Dimethyl-9:10-dihydrophenazine, A., 991.
 Dimethyldihydric acids, 4:5-dichloro-, and 5-chloro-4-hydroxy-, and its acetyl derivative, A., 361.
 4:5-dihydroxy-, reaction of, with acetic anhydride, and their derivatives, A., 96.
 Dimethyl diketone (*diacetyl*), manufacture of, (P.), B., 218.
 in butter, B., 378, 781.
 in dairy products, B., 521.
 in furfuraldehyde, B., 714.
 in milk products, B., 521.
 di-(*m*-nitrobenzhydrazide) and di-(2:4-dinitrophenylhydrazone), A., 743.
 and its dioxime, colour reactions of, with carbamides and carbazides, A., 609.
 detection of, in fats, B., 858.
 determination of, A., 1516.
 1:1'-Dimethyl-7:7'-endodimethenyliothiocarbocyanine bromide, (P.), B., 842.
 1:3-Dimethyl-3- β -dimethylaminoethylloxindole, and its picrate and picrolonate, A., 636.
 1:3-Dimethyldioxindole, A., 635.
 Dimethyldiphenyl. See Ditolyl.
 Dimethyldiphenylene oxides, A., 757.
 $\beta\beta$ -3:3'-Dimethyldiphenylglutaric acid, 2:2'-dihydroxy-, and its copper salt, A., 353.
 1:1'-Dimethyl-2:3'-dipiperidyl, and its salts, A., 1252, 1253.
 6:6'-Dimethyl-2:2'-dipyridyl salts, A., 630.
 $\eta\lambda$ -Dimethyl- Δ^8 -*n*-dodecatriene- $\delta\epsilon$ -diol, A., 608.
 5:6-Dimethylenedioxybenzyl alcohol, 2:3-dibromo-, A., 860.
 6:7:3:4'-Dimethylenedioxybenzyl-1:2:3:4-tetrahydroisoquinoline, synthesis of, and its hydrochloride, A., 357.
 4:6-Di-(3':4'-methylenedioxyethyl)-*m*-dinitrobenzene, A., 619.
 2-(Dimethyl-4'-ethylbenzoyl)benzoic acids, 3:4:5:6-tetrachloro-, A., 859.
 1:5-Dimethyl-1'-ethyl-5':8'-benz-2:2'-pyrazinopyridocyanine iodide, (P.), B., 1037.
 $\alpha\alpha$ -Dimethylethylcarbamide, A., 1155.
 2:4-Dimethyl-3-ethyl-5-carbomethoxymethylpyrrole, A., 632.
 3:3'-Dimethyl-4-ethyl-4'- β -carbomethoxyethylpyrromethene, 5-bromo-, and its salts, A., 632.
 4:3'-Dimethyl-3-ethyl-4'- β -carbomethoxyethylpyrromethene, and its salts, A., 632.
 3:3'-Dimethyl-4-ethyl-4- β -carboxyethylpyrromethene, 5-bromo-, hydrobromide, A., 633.
 6:2'-Dimethyl-1-ethyl-2:1'-cyanine iodide, A., 224.
 s -Dimethylethylene, preparation of butadiene from, A., 1480.
 2:3-Dimethyl-4-ethylpyrrole-1-carboxylic acid, ethyl ester, A., 631.
 2:4-Dimethyl-3-ethylpyrrole-1- and -5-carboxylic acids, ethyl esters, A., 631.
 3:6-Dimethyl-2-ethylquinoline, and its picrate, A., 989.
 4:2'-Dimethyl-3-ethylthiazolo-1-cyanine iodide, A., 224.
 6:7-Dimethylflavin-9-acetic acid, and its glyceryl and methyl esters, A., 503.
 4:3'-Dimethyl-7:6-furocoumarin, A., 986.
 3:6-Dimethylglucose, A., 477.
l-trans- $\alpha\gamma$ -Dimethylglutaconic acid, catalytic effect of alkalis on rate of racemisation of, A., 66.
 $\beta\beta$ -Dimethylglutarimide, $\alpha\alpha'$ -dicyano-, electrolytic reduction of, A., 737.
 Dimethylglyoxime, compounds of, with cobaltous chloride, A., 476.
 $\alpha\alpha$ -Dimethylguanidine flavanate, A., 639.
 $\beta\delta$ -Dimethylheptane, $\beta\delta$ -dihydroxy-, A., 194.
 Dimethylheptanes, bromo-, A., 844.
 $\gamma\epsilon$ -Dimethylheptane- $\beta\zeta$ -dione, δ -nitro- $\gamma\epsilon$ -dihydroxy-, A., 348.
 Dimethyl- Δ^8 -heptenes, A., 1348.
 $\beta\beta$ -Dimethyl- Δ^{10} -hexadiene, A., 1348.
 $\beta\delta$ -Dimethylhexane, $\beta\delta$ -dihydroxy-, A., 194.
 Dimethylhexanes, bromo-, A., 844.
 Dimethylcyclohexane, separation of, from Mid-Continent petroleum, B., 887.
 catalytic dehydrogenation of, A., 310.
 1:1-Dimethylcyclohexane, preparation of, and its behaviour towards catalysts, A., 333.
 Raman spectrum of, A., 1054.
cis- and *trans*-1:3- and -1:4-Dimethylcyclohexanes, Raman spectra of, A., 1054.
 Dimethylcyclohexanedicarboxylic acid, diethyl ester, A., 65.
 $\beta\beta$ -Dimethylhexane- $\gamma\epsilon$ -diol, A., 198.
 3:5-Dimethylcyclohexane-1:3-diols, A., 199.
 1:3-Dimethylcyclohexane-1:2:2:3-tetracarboxylic acid, and its tetraethyl ester, A., 620.
 1:3-Dimethylcyclohexane-1:2:3-tricarboxylic acid, and its silver salt and trimethyl ester, A., 620.
 3:3-Dimethylcyclohexanol, A., 334.
 $\beta\beta$ -Dimethylhexan- ϵ -ol- γ -one, A., 198.
 $\beta\beta$ -Dimethylcyclohexanone, forms of, A., 1239.
 1:1-Dimethylcyclohexene, A., 334.
 $\alpha\alpha$ -Dimethyl- Δ^8 -hexen- γ -ol, and its hydrogen phthalate, A., 963.
 $\beta\beta$ -Dimethyl- Δ^8 -hexen- γ -one, A., 198.
 Dimethylhexitol, synthesis of, and its hexaacetyl derivative, A., 605.
 and its derivatives, A., 1104.
 $\beta\delta$ -Dimethylhexoic acid, A., 1482.
 $\gamma\delta$ -Dimethyl-*n*-hexoic acid, A., 1482.
 3:3'-Dimethylhydrazobenzene, 3:3'-ditrifluoro-, preparation of, A., 77.
 Dimethyl- γ -hydroxy- $\beta\beta$ -dimethylamylamine, and its salts, A., 1362.
 Dimethyl- γ -hydroxy- $\beta\beta$ -dimethylheptylamine, and its ester hydrochlorides, A., 1363.
 $\beta\zeta$ -Dimethyl- γ -hydroxymethyl- Δ^8 -heptadiene, A., 605.
 $\beta\zeta$ -Dimethyl- γ -hydroxymethyl- Δ^1 -hepten- β -ol, A., 605.
 Dimethyl- γ -hydroxy- γ -phenyl- $\beta\beta$ -dimethylpropylamine, and its hydrochloride, A., 1362.
 6:7-Dimethyl-9- $\beta\gamma$ -dihydroxypropylisoalloxazine, A., 95.
 1:7-Dimethylhypoxanthine, 2-chloro-, methiodide and periodide of, A., 1133.
 1:7-Dimethylindane, 4-bromo-, A., 1117.
 3:4-Dimethylindene, 7-bromo-, A., 1117.
 2:3-Dimethylindenone, and its 2:4-dinitrophenylhydrazone and semicarbazone, A., 1233.
 4:7-Dimethylisoidogotin, and its sodium disulphonate, A., 1131.
 Dimethylindoles, nitroso-, constitution of, A., 225.
 2:5-Dimethyldiolyl-3-acetic acid, and its *p*-tolylhydrazine, A., 1352.
 4:7-Dimethylisatan, A., 1131.
 1:1-Dimethyl-2- γ -keto-*n*-butylcyclobutane, A., 1375.
 Dimethylketol. See Acetylmethylcarbinol.
 $\beta\beta$ -Dimethyl- ψ -leucines, α -bromo-, A., 71.

- 6:7-Dimethyl-9-*d*-1'-lyxitylisoalloxazine, and its tetra-acetyl derivative, A., 993, 1134.
- Dimethylmalonic acid, distribution of, between two contiguous liquid phases, A., 441.
- ethyl hydrogen ester, and its oxidation, A., 1351.
- 4:6-Dimethyl- δ -mannolactone, and its derivatives, A., 1108.
- 4:6-Dimethylmannose, and its 2:3-isopropylidene derivative, A., 1108.
- 4-Dimethylmethenyltetrazole, A., 1509.
- Dimethylmethoxymethylcarbonyl acetate, A., 473.
- 1:3-Dimethyl-3- β -methylaminoethylidihydroindole, and its picrates, A., 636.
- 1:3-Dimethyl-3- β -methylaminoethylloxindole, and its salts, A., 636.
- 2:3-Dimethylmethyl-*l*-arabinomethyloside, A., 476.
- $\beta\delta$ -Dimethyl- ζ -methylheptane, $\beta\delta$ -dihydroxy-, A., 194.
- $\beta\delta$ -Dimethyl- ϵ -methylhexane, $\beta\delta$ -dihydroxy-, A., 194.
- 2:3-Dimethylmethylmannopyranoside, A., 477.
- 2:5-Dimethyl-1- β -(4-methyl-1-naphthyl)-ethylcyclopentan-1-ol, A., 742.
- $\beta\delta$ -Dimethyl- η -methyloctane, $\beta\delta$ -dihydroxy-, A., 194.
- 6:7-Dimethyl-2- δ -methyl- Δ^{γ} -pentadienylquinizarin, A., 1254.
- $\alpha\gamma$ -Dimethylmuco- γ -lactone acid, and its monoamide, A., 484.
- $\alpha\gamma$ -Dimethylmuconic acid, methyl hydroxamate of, A., 484.
- 2:7-Dimethylnaphthacene, and its 9:10-quinone, A., 335.
- 1:2-Dimethylnaphthalene, isolation of, from coal tar, A., 334.
- 2:3-Dimethylnaphthalene, 1:4-dihydroxy-, diacetyl derivative, A., 1501.
- 1:2-Dimethylnaphthalene-4-sulphonic acid, and its derivative, A., 334.
- 2:3-Dimethyl-1:4-naphthaquinhydrone, A., 1501.
- 1:2-Dimethyl- α -naphthaquinone, A., 334.
- 2:3-Dimethyl-1:4-naphthaquinone, reaction of, with magnesium phenyl bromide, A., 1501.
- Dimethylnaphthaquinones, additive reactions of, and hydroxy-, and their derivatives, A., 216.
- 3:7-Dimethyl-1:2-naphthaquinone-4-sulphonic acid, potassium salt, A., 216.
- Dimethyl- $\alpha\beta$ -naphtha-1:2:3-triazoles, salts of, A., 359.
- 3:6-Dimethyl-2-naphthoic acid, and its derivatives, A., 335.
- 3:4-Dimethyl- α -naphthol, and its derivative with diazobenzene chloride, A., 334.
- 3:7-Dimethyl- β -naphthol, 1-amino-, *N*-acetyl derivative, A., 216.
- 3:6-Dimethyl- β -naphthylamine, and its derivatives, A., 335.
- $\alpha\delta$ -Di-(4-methyl-1-naphthyl)butane, and its derivatives, A., 741.
- Dimethyl- γ -nitrobenzylamine, and its derivatives, A., 1232.
- $\beta\delta$ -Dimethylnonane, $\beta\delta$ -dihydroxy-, A., 194.
- 3:7-Dimethyl-[0:3:4-dicyclo]nonan-2-one-3:4-dicarboxylic acid, ethyl ester, A., 756.
- $\delta\epsilon$ -Dimethyl- $\Delta^{\delta\epsilon}$ -octadiene, A., 1348.
- α -($\gamma\eta$ -Dimethyl- $\Delta^{\beta\delta}$ -octadienyl)- γ -butyrolactone, A., 474.
- $\gamma\eta$ -Dimethyl- $\Delta^{\beta\delta}$ -octadienylmalonic acid, diethyl ester, A., 474.
- $\beta\gamma$ -Dimethyloctaldehyde, ζ -chloro- η -hydroxy-, A., 979.
- 2:2'-Dimethyl- $\Delta^{1:1'(2:2')}$ -octahydrodiphenyl-5:5'-dicarboxylic acid, and its dimethyl ester, A., 974.
- $\beta\delta$ -Dimethyloctane, δ -bromo-, A., 844.
- $\beta\delta$ -dihydroxy-, A., 194.
- $\beta\zeta$ -Dimethyl- $\Delta^{\gamma\epsilon}$ -octatrienal derivatives, A., 1353.
- $\gamma\eta$ -Dimethyl- $\Delta^{\beta\delta}$ -octatrienol. See Dehydrogeraniol.
- $\gamma\eta$ -Dimethyl- Δ^{ζ} -octen- $\alpha\gamma$ -diol, A., 605.
- $\gamma\delta$ -Dimethyl- Δ^{δ} -octen- γ -ol, A., 847.
- α -($\gamma\eta$ -Dimethyl- Δ^{ζ} -octenyl)- γ -butyrolactone, A., 474.
- α -($\gamma\eta$ -Dimethyl- Δ^{γ} -octenyl)- γ -butyrolactones, A., 474.
- 2:6-Dimethylol-*p*-cresol, condensation of, with esters of higher fatty acids, A., 746.
- 2:2'-Dimethyloxacarboxyanine, 4:4'-dichloro-, iodide, production of, (P.), B., 783.
- 5:5'-dihydroxy-, perchlorate, production of, (P.), B., 783.
- 2:2'-Dimethyloxacyanine iodide, (P.), B., 842.
- 3:5-Dimethyl-4-oxathia- $\Delta^{2:5}$ -cyclohexadiene 1:1-dioxide, A., 497.
- 1:3-Dimethyloxindole, 5-hydroxy-, and its ethyl ether, A., 636.
- 4:7-Dimethyloxindole, and its derivatives, A., 1131.
- $\beta\gamma$ -Dimethylpentane, A., 1482.
- $\beta\gamma$ -Dimethylpentane, 1-*a*-bromo-, A., 1482.
- $\gamma\delta$ -Dimethylpentane, *d*-*a*-bromo-, A., 1482.
- $\beta\gamma$ -Dimethylpentan- α -ol, A., 1482.
- 1- $\beta\delta$ -Dimethylpentan- α -ol, A., 1482.
- 2:2-Dimethylcyclopentanone-4-carboxylic acid, and its ethyl ester, A., 1246.
- 2:2-Dimethylcyclopentanone-4:5-dicarboxylic acid, ethyl ester, A., 1246.
- 2:2-Dimethylcyclopentanone-5-glyoxylic acid, and its ethyl ester, A., 752.
- 1:9-Dimethyl-1:2-cyclopentanone-1:2:3:4-tetrahydrophenanthrene, A., 741.
- $\beta\gamma$ -Dimethyl- Δ^{γ} -n-penten- β -ol, A., 847.
- 9:3'-Dimethyl-1:3-cyclopentenophenanthrene, and its derivatives, A., 742.
- 4:5-Dimethylphenanthrene, attempted synthesis of, A., 205.
- 4:5-Dimethylphenazone, A., 870.
- 2:4-Dimethylphenol- β -*d*-glucoside, and its tetra-acetyl derivative, A., 964.
- 2:10-Dimethylphenoxarsine, A., 1257.
- 3:4-Dimethylphenyl-*l*-arabamine, A., 1510.
- 3:3-Dimethylphenylcarbamic acid, cholesteryl ester, A., 209.
- 4:5-Dimethylphenylcarbamic acid, 2-amino-, ethyl ester, A., 359.
- 2:2'-Dimethyl-7:7'-*o*-phenyleneoxacarboxyanine iodide, (P.), B., 843.
- Dimethyl-*o*-phenylenephthalazocarboxyanine iodide, (P.), B., 843.
- 2:2'-Dimethyl-7:7'-*o*-phenylenethiocarboxyanine iodide, (P.), B., 842.
- $\alpha\alpha$ -Di-(3-methylphenyl)-*n*-heptane, $\alpha\alpha$ -di-4-hydroxy-, A., 80.
- 1:1-Di-(3-methylphenyl)cyclohexane, 1:1-di-4-hydroxy-, A., 80.
- Di-(3-methylphenyl)methanes, di-4-hydroxy-, and their purgative properties, A., 80.
- 2:2'-4'-Dimethylphenyl-2-methyl- Δ^3 -tetrahydrobenzaldehyde, and its sodium bisulphite compound, A., 978.
- $\alpha\alpha$ -Di-(3-methylphenyl)- α -phenylethane, $\alpha\alpha$ -di-4-hydroxy-, A., 80.
- 3:4-Dimethylphenyl-*d*-ribamine, A., 1510.
- Dimethylphthalide-3:4-dicarboxylic acid, and its silver salt and anhydride, A., 1365, 1496.
- 1:3-Dimethyl-3- β -phthalimidoethylloxindole, A., 635.
- $\alpha\alpha$ -Dimethylpimelic acid, $\alpha\alpha'$ -dibromo-, diethyl ester, A., 620.
- NN'*-Dimethylpiperazine, and its dihydrochloride, A., 1508.
- 2:6-Dimethylpiperidine-3-carboxylic acid, ethyl ester, and its hydrochloride, A., 92.
- $\alpha\alpha$ -Dimethylpropyl methoxyacetate, A., 473.
- Dimethyl-*n*-propylarsoninum picrate, hydroxy-, A., 738.
- $\beta\gamma$ -Dimethyl- ϵ -isopropyl- Δ^{γ} -*n*-hepten- ϵ -ol, A., 845.
- 2:7-Dimethyl-4-isopropyl-1-hydrindone, A., 75.
- 4:6-Dimethyl-2:3-isopropylidene- α -methylmannopyranoside, A., 1108.
- 5:10-Dimethyl-8-isopropyl-3:4-10:11:5':6':7':8'-octahydro-2':1'-naphthalene-1:2-fluorene, A., 75.
- 2:3-Dimethyl-3-propylpyrrole-1-carboxylic acid, ethyl ester, A., 631.
- 1:3-Dimethylpyrazolecarboxylic acids, methyl esters, A., 1380.
- 2:4-Dimethylpyrrole, derivatives of, A., 221.
- 2:4-Dimethylpyrrole, 5-amino-, acetyl derivative, and its salts, A., 221.
- 2:4-Dimethylpyrrole-1-carboxylic acid, ethyl ester, A., 631.
- 2:4-Dimethylpyrrole-3-carboxylic acid, 5-thiocyano-, and 5-thiol-, ethyl esters, A., 221.
- 3:5-Dimethyl-2-pyrrolylacetic acid, ethyl ester, and its semicarbazone, A., 221.
- 3:5-Dimethyl-2-pyrrolylacetone, A., 221.
- 3:5-Dimethyl-2-pyrrolylcarbinol, and its acetyl derivative, A., 221.
- 3:5-Dimethyl-2-pyrrolylmethylacetamide, A., 221.
- 3:5-Dimethyl-2-pyrrolylphenylcarbinol- ϵ -carboxylic acid, and its silver salt, A., 221.
- 3:5-Dimethyl-2-pyrrolylphenylthialide, and its 4-benzeneazo-derivative, A., 221.
- 3:5-Dimethyl-2-pyrrolylphenylpyrazolone, A., 221.
- 2:3-Dimethylpyranose, A., 477.
- Dimethylpyruvic acid, *p*-mono- and 2:4-dinitrophenylhydrazones and phenylsemicarbazone, A., 756.
- Dimethylquinacridones, A., 992.
- 2:2'-Dimethyl-4:4'-quinazocyanine iodide, (P.), B., 842.
- 6:7-Dimethyl-9-*l*-1'-rhamnitylisoalloxazine, and its tetra-acetate, A., 760.
- 5:6-Dimethyl-1-*l*-rhamnitylbenziminazole, 2-hydroxy-, A., 760.
- 6:7-Dimethyl-9-*d*-1'-ribitylisoalloxazine, and its tetra-acetate, A., 631, 760.
- See also *d*-Riboflavin.
- 6:7-Dimethyl-9-*l*-1'-ribitylisoalloxazine, A., 1134.
- 1:4-Dimethylsantene, and its derivatives, A., 983.
- Dimethylsantenols, A., 983.
- 4:6-Dimethylsantene, and its semicarbazone, A., 983.
- 3:4-Dimethylseleno- Δ^3 -cyclopentene 1:1-dioxide, A., 100.
- 2:6-Dimethyl-1-*d*-sorbitylbenziminazole, A., 359.
- $\beta\beta$ -Dimethylsuccin-*p*-tolil, α -hydroxy-, A., 474.
- $\beta\beta$ -Dimethylsuccin-*p*-toluidic acid, α -hydroxy-, A., 474.
- 1:2-Dimethyl-1:4:4':9'-tetrahydroanthraquinone, 3-chloro-, (P.), B., 622.
- Di-3-methyl-4:5:6:7-tetrahydroindylmethine, and its salts, A., 870.
- Dimethyl-1:2:3:4-tetrahydronaphthacenes, A., 335.

- 1:2-Dimethyltetrahydronaphthalene, A., 481.
 Dimethyl-1:2:3:4-tetrahydronaphthalenes, A., 335.
 Dimethyl-1:2:3:4-tetrahydronaphthalenesulphonamides, A., 335.
 Dimethyl-1:2:3:4-tetrahydronaphthoic acids, A., 335.
 Dimethyl-1:2:3:4-tetrahydronaphthols, A., 335.
NN'-Dimethyl-2:3:9:10-tetrahydrophenazine, A., 991.
 Dimethyl-5:6:7:8-tetrahydroquinolines, and their salts, A., 222.
 Dimethyl-5:6:7:8-tetrahydroquinoline-3-carboxylic acids, and their derivatives, A., 222.
 3:3'-Dimethyl-2:2':6:6'-tetramethylthiol-7:7'-*o*-phenylene-4:4'-pyrimidocarbocyanine bromide, (P.), B., 843.
 Dimethylthapsin, A., 91.
 3:4-Dimethylthiacyclopentane, 3:4-dichloro-, and its dioxide and compound with mercuric chloride, A., 325.
 2:2'-Dimethylthiocarbocyanine *p*-toluenesulphonate, (P.), B., 842.
 2:2'-Dimethylthiol-3:3'-dimethyl-4:4'-pyrimidocyanine perchlorate, (P.), B., 842.
 3:3'-Dimethylthiol-2:2'-dimethyl-1:1'-thio-2:4-diazolocyanine iodide, (P.), B., 842.
 4:4'-Dimethylthiol-2:2'-dimethyl-2:3-thiodiazolocyanine iodide, (P.), B., 842.
 1:4-Dimethylthiol- $\beta\beta'$ -thiodiazole, (P.), B., 842.
 2:5-Dimethylthiophen, 3:4-diiodo-, A., 355.
 2:5-Dimethyltoluene, 2:5-dichloro-, A., 853.
 $\theta\mu$ -Dimethyl- $\Delta^{\eta\lambda}$ -tridecatrien- δ -one, and its semicarbazidosemicarbazone, A., 609.
NN'-Dimethyltrimethyleneammonium bromide, A., 965.
 $\alpha\alpha$ -Dimethyl- δ -($\alpha'\beta'\beta'$ -trimethylpropyl)- Δ^5 -octene- $\gamma\epsilon$ -diol, A., 963.
 Dimethyltryptamine methiodide, A., 499.
NN'-Dimethyltryptamine, and its salts, A., 1379.
 $\beta\beta$ -Dimethyltyrosines, α -bromo-, A., 71.
 $\zeta\kappa$ -Dimethyl- $\Delta^{ac\epsilon}$ -*n*-undecatriene- $\gamma\delta$ -diol, A., 608.
 $\zeta\kappa$ -Dimethyl- Δ^7 -undecen- β -one, ϵ -chloro- κ -hydroxy-, A., 979.
 1:3-Dimethyluracil, 4-chloro-, A., 1133.
 Dimethylisouric acids, chloro-, A., 361.
 3:9-Dimethyluric acid glycol, and its dimethyl ether, reaction of, with acetic anhydride, and their acetyl derivatives, A., 226.
 $\beta\gamma$ -Dimethylvaleraldehyde semicarbazone, A., 963.
l- $\alpha\gamma$ -Dimethylvaleric acid, and its ethyl ester, A., 1482.
 $\beta\beta$ -Dimethylvaleric acid, δ -amino- $\alpha\gamma$ -di-cyano-, A., 737.
d- $\beta\gamma$ -Dimethylvaleric acid, and its ethyl ester, A., 1482.
 Dimethylvinylacetylenylcarbinol, A., 470.
 Dimethylxanthines, compounds of, with camphoric acid salts, (P.), B., 287.
 6:7-Dimethyl-9-*d*-1'-xylitylsalloxazine, and its tetra-acetate, A., 631, 760.
 Dimethyl-*m*-xyloylo-5:10-benzoylenemorphanthridone, formation of, A., 992.
 Dimorphine, hydroxy-, determination of, A., 1260.
Dimorphothea cuneata, poisonous principle of, A., 551.
 $\alpha\beta\beta\alpha'$ -Dinaphthyls, 6:13-dihydroxy-, manufacture of, and azo-dyes therefrom, (P.), B., 219.
 1:1'-Dinaphthyl, 2:2':6:6'-tetrahydroxy-, A., 614.
 4:4'-Dinaphthyl, 6:6'-dibromo-1:2:1':2'-tetrahydroxy-, tetra-acetyl derivative, A., 1243.
 Dinaphthyl diselenide, hexabromo-, A., 1257.
 sulphide, 3:3'-dinitro-4:4'-dihydroxy-, A., 856.
 Di-1-naphthyl sulphide, di-2-hydroxy-, A., 616.
 Di-(α -naphthylcarbamic acid), pentane- $\alpha\delta$ -diol ester, A., 340.
 1:4-Di- α -naphthyl-2-naphthaldehyde, and its oxime and acetyl oxime, A., 748.
 1:4-Di- α -naphthyl-naphthalene, derivatives of, A., 748.
 1:4-Di- α -naphthyl-naphthalene-2:3-dicarboxylic acid, diethyl ester and anhydride of, A., 748.
 1:4-Di- α -naphthyl-2-naphthonitrile, A., 748.
 1:4-Di- α -naphthyl-1:4-oxido-1:2:3:4-tetrahydronaphthalene-2:3-dicarboxylic anhydride, A., 748.
 Di- α -naphthyl thioketone, A., 1241.
 Dinas, determination of density of articles of, B., 227.
 See also under Bricks.
 Dinicotinylmethane, and its hydrochloride, A., 499.
 Dinoflagellates, marine, culture and physiology of, A., 1166.
dl-Dinoreserethole *d*- and *l*-tartrates, A., 499.
dl-Dinoreserethole *d*-bromocamphorsulphonate, A., 499.
 2:2:2-Dicyclooctane, A., 212.
 (—)Di- β -octyl sulphide, A., 1230.
n- $\alpha\beta$ -Diols, action of *Aspergillus niger* on, A., 193.
 Diolivetolcarboxylic acid methyl ether, A., 749.
 Diopside, sky-blue, from 1906 Vesuvius eruption, composition of, A., 1479.
 Diorite in limestone at Ben Bullen, N.S. Wales, A., 954.
 from Brookfield, Connecticut, A., 60.
 in the Manson plateau, Puy-de-Dôme, A., 956.
Diospyros costata, carotenoids of fruits of, A., 1040.
 Diothane, stability of solutions of, B., 653.
 Dioxan (diethylene dioxide), electron diffraction structure of, A., 572.
 Raman spectrum of, A., 1301, 1446.
 heats of fusion and transformation of, A., 690.
 association of water and deuterium oxide in solutions of, A., 931.
 as solvent for cellulose esters, (P.), B., 110.
 "Dioxan-lignin," A., 491.
 1:9-Dioxa-5-*spiro*nonane, formation of, by hydrogenation of furalacetaldehyde, A., 90.
NN'-Di-(β -oxido-*n*-propyl)-*p*-phenetidine, A., 614.
 Dioximes, A., 345, 638, 684, 752, 763.
 reaction of, with magnesium methyl iodide, A., 638.
 1:3-Dioxins, A., 627.
 Dioxindole, and *N*-hydroxy-, A., 356.
 Dipentene, Raman spectrum of, A., 1301.
 Di- $\Delta^{1:1'}$ -cyclopentene, A., 1244.
 1:2:3:4-Dicyclopentenoanthraquinone, A., 1244.
s-Dicyclopentenylacetone, and its semicarbazone, A., 1107.
s-Di- β -cyclopentyl ethyl ketone, A., 1107.
 Di(cyclopentylmethyl)benzene, A., 80.
 Dipeptidase in wheat seeds, A., 1179.
 animal and vegetable, affinity of, A., 1537.
 Dipeptides, titration constants of, A., 170.
 containing serine, synthesis of, A., 1014.
 2:5-Diphenacyl-1-methylpyrrolidine, and its salts, A., 874.
o-Diphenetidine, preparation of, A., 337.
 $\alpha\delta$ -Diphenetylbutane, A., 1236.
 $\alpha\gamma$ -Diphenetylpropane, A., 961.
 Di-*p*-phenetylacetamide, and its salts, A., 1490.
 Di-*p*-phenetylformamidine, A., 339.
 $\alpha\zeta$ -Di-*p*-phenetylhexane, A., 1236.
 $\delta\delta$ -Di-*p*-phenetylvalerolactone, A., 961.
 Diphenic acid, *p*-nitrobenzyl ester, A., 81.
 Diphenic acid, 4:6:4':6'-tetra-bromo-derivatives, and their salts, A., 1237.
 4:6:4':6'-tetranitro-, methyl ester, compound of, with iodine, A., 828.
 Diphenemethylimide, A., 1357.
pp'-Diphenoxydiphenoxydiphenyl ether, A., 745.
 Diphenoxyposphorylthiocarbamide, and its mercuric salt, A., 1486.
 Diphenyl, manufacture of, (P.), B., 621.
 electric furnace for, (P.), B., 939.
 and its derivatives, resonance energy in, A., 569.
 and its derivatives, heats of combustion of, A., 584.
 mixtures of acetone and, and solubility of a third substance therein, A., 1457.
 equilibrium of, with dibenzyl and naphthalene, A., 448.
 Friedel-Crafts reactions on, A., 85.
 derivatives, 2:2'-disubstituted, stereoisomerism of, A., 1496.
 unsymmetrical, synthesis of, A., 1361.
 and its oxide, use of mixtures of, in boiler plant, B., 577.
 Diphenyl, 2:4'-diamino-, halogenation of, A., 1489.
 tribromo-, bromoamino-, bromoiodo-, tri- and tetra-chloro-, chloroamino-, chlorobromo-, and chloroiodo-derivatives, A., 1489.
 chloro-derivatives, manufacture of, (P.), B., 761.
 mono- and di-chloro-, manufacture of, (P.), B., 93.
 3- and 5-chloro-2-hydroxy-, manufacture of, (P.), B., 716.
 5-chloro-2-hydroxy-, and mono- and di-hydroxy-, mercury ethyl salts, A., 202.
 6-chloro-2-hydroxy-, potassium sulphate of, A., 1233.
 hydroxy-derivatives, production of, (P.), B., 297.
 esters, A., 1233.
 2:2'-dihydroxy-, nitration of, and its dinitro-derivatives, A., 615.
 3:4-dihydroxy-, production of, (P.), B., 140.
 2:2':4:4'-tetraiodo-, and 4:4'-diiodo-2:2'-diamino- and -2:2'-dinitro-, A., 613.
 5-iodo-2-hydroxy-, and its acetyl derivative, A., 210.
 4:4'-diiodo-2-nitro-2'-amino-, A., 1489.
 5-nitro-2-cyano-, and its derivatives, A., 1155.
 production of, (P.), B., 877.
 dinitro-2:2'-dihydroxy-derivatives, condensation of, with formaldehydes, A., 627.
 Diphenyls, stereochemistry of, A., 742, 1364.
 Diphenyl compounds, therapeutic substances from, A., 1233.
 ether, Raman spectrum of, A., 281.
 2-mono- and 2:3'-di-fluoro-4'-hydroxy-, A., 856.

- Diphenyl ether, 4-iodo-2',4'-dinitro-2-amino-, acetyl and *o*-nitrobenzoyl derivatives, A., 1491.
2',4'-dinitro-, and its amino-, bromo-hydroxy-, and iodoamino-derivatives, A., 484.
ethers, amino-, acyl derivatives, rearrangement of, A., 1491.
o-amino-, rearrangement of, A., 484.
ethylene glycol ether, and *pp'*-dibromo-, and *oo'*-dinitro-, A., 614.
diimino-oxalate, *di-o*-hydroxy-, A., 1491.
diselenide, 2,2'-diamino-, dibenzoyl derivative, 2,4:6,2':4':6'-hexabromo-, 2,2'-dichloro-, and 2,4-dinitro-, A., 1257.
sulphide, dinitro- and nitroamino-derivatives, and their derivatives, A., 485, 486.
2-nitro-2'-amino-, benzoyl and formyl derivatives, and 2,4-dinitro-2'-amino-, benzoyl derivative, A., 615.
Diphenyl series, A., 1361, 1489.
2:6-Diphenyl-4-(2'-acetoxy-5'-methoxyphenyl)pyrylium ferrichloride, A., 354.
2:6-Diphenyl-4-(*o*-acetoxyphenyl)pyrylium ferrichloride, A., 354.
 $\gamma\gamma$ -Diphenylacetaldehyde, and its phenyl-hydrazone, A., 1241.
Diphenylamine, extraction of, from smokeless powder, (P.), B., 751.
derivatives, crystal structures of, A., 434.
assay of saccharated iron compounds with, B., 253.
use of, as indicator in volumetric analysis of steel, B., 64.
determination of, in propellant explosives, B., 334.
in smokeless powders, B., 879.
Diphenylamine, dibromo-, preparation of, A., 613.
5-chloro-2-nitrohydroxy-derivatives, A., 1489.
5-iodo-2',4'-dinitro-2-hydroxy-, acetyl derivative, A., 1491.
2,3'-dinitro-, A., 486.
2',4'-dinitro-, aminohydroxy-, bromo-hydroxy-, chlorohydroxy-, iodohydroxy-, and nitroamino-derivatives of, A., 484.
dinitrohydroxy-, analysis of, B., 296.
o-thiol-, derivatives of, A., 1511.
Diphenylamine-4-arsinic acid, 2-nitro-, A., 1514.
Diphenylaminecarboxylic acids, 5-chloro-2-nitro-, A., 1489.
Diphenylaminesulphone, 3-amino-, 2-chloro-, and 2-hydroxy-, (P.), B., 140.
Diphenylaminesulphone-1:3:6:8-tetra-sulphonic acid, 2-hydroxy-, (P.), B., 140.
Diphenylaminesulphone-1:6:8-trisulphonic acid, 3-amino-, (P.), B., 140.
 δ -Diphenylamino- β -dimethyl-*n*-heptane, A., 736.
2:5-Diphenyl-3:4-(amino-2:2'-diphenylene)- $\Delta^{2,4}$ -cyclopentadienones, A., 1242.
2:5-Diphenyl-3:4-(4'-amino-2:2'-diphenylene)- Δ^4 -cyclopentenone, 3-hydroxy-, A., 1242.
3:5-Diphenyl-2-*p*-anisyl-2:3-dihydro-1:3:4-thiodiazole, A., 1512.
Diphenylanisylmethyl, and its sodium additive compound, A., 1188.
9:10-Diphenylanthracene oxide, dissociable, A., 1233.
2:5-Diphenyl-3:4-(1:9-anthranylene)- $\Delta^{2,4}$ -cyclopentadienone, A., 1242.
Diphenylarsine, A., 767.
Diphenylarsine, hydroxy-, and iodo-, A., 768.
1:2-Diphenylazeperylene, 1:2-*di-p*-chloro-, A., 1370.
5:5-Diphenylbarbituric acid, A., 1132, 1507.
Diphenylisobenzofuran, action of malic anhydride on, A., 1377.
Diphenylbenzidine, preparation and use of, as oxidation-reduction indicator, A., 462.
Diphenylbenzidinesulphonic acid, preparation of, and use as indicator, A., 1092.
2:4-Diphenyl-5:6-benzoquinoline, and its salts, A., 337.
3:6-Diphenyl-*p*-benzoquinone, 2:5-dichloro-, A., 87.
Diphenyl-*pp'*-bis-(4-bromo-2-azo-*n*-naphthylamine), A., 1490.
Diphenylbisnorallocholycarbinol, A., 1370.
2:5-Diphenyl-3-*p*-bromophenyl-2:3-dihydro-1:3:4-thiodiazole, A., 1512.
1:3-Diphenyl-5-*p*-bromophenyl-2(Δ^4)-pyrrolone, A., 498.
1:3-Diphenyl-5-*p*-bromophenyl-2-pyrrolone, 5-hydroxy-, A., 498.
 $\beta\beta$ -Diphenyl-*n*-butane, $\beta\beta$ -*di-p*-hydroxy-, A., 80.
 $\alpha\beta$ -Diphenylbutan- α -ols, diastereoisomeric, and their phenylurethanes, A., 340.
Diphenylcarbamie acid, cholesteryl ester, A., 209.
Diphenylcarbazide as indicators for dichromates, A., 721.
Diphenylcarbazone, use of, in determination of metals, A., 950.
Diphenyl-2'-carboxylic acid, β -diethyl-aminoethyl ester, A., 1155.
Diphenyl-4-carboxylic acid, 2',4'-dinitro-2-amino-, and its 2:4-dinitrophenyl ester, A., 484.
Diphenyl-5-carboxylic acid, 2',4'-dinitro-2-hydroxy-, and its 2:4-dinitrophenyl ester, A., 484.
Diphenylcarboxylic acids, 2-nitro-, A., 211.
Diphenyl-4'-chlorophenylcarbamide, A., 1118.
2:5-Diphenyl-3-*p*-chlorophenyl-4-*p*-dimethylaminophenylcyclopentadienone, A., 216.
12:14-Diphenyl-2:6-dichloroquinacridone, A., 992.
Diphenylcholane-3:24-di-ol diacetate, A., 1494.
 $\alpha\alpha$ -Diphenyldecane, $\alpha\alpha$ -dioximino-, and its diacetyl derivative, and $\alpha\alpha\alpha\alpha$ -tetranitro-, A., 346.
Diphenyl-5:5'-dialdehyde, 3:3'-dinitro-2:2'-dihydroxy-, and its monoxime, A., 627.
2:5-Diphenyl-3:4-dianisylcyclopentadienone, A., 216.
12:14-Diphenyl-1:2:5:6- and -3:4:7:8-dibenzoquinacridones, A., 992.
1:3-Diphenyl-1:3-dibenzylcyclobuta-2:4-dione, A., 1124.
 $\alpha\gamma$ -Diphenyl- $\alpha\gamma$ -di-(*p*-bromophenyl)allene, A., 1115.
2:5-Diphenyl-3:4-di-*p*-bromophenylcyclopentadienone, A., 216.
 $\alpha\gamma$ -Diphenyl- $\alpha\gamma$ -di-(*p*-bromophenyl)propyl alcohol, A., 1115.
 $\alpha\gamma$ -Diphenyl- $\alpha\gamma$ -di-(*p*-bromophenyl)- Δ^a -propylene, A., 1115.
Diphenyl-4:4'-dicarbamic acid, cholesteryl ester, A., 210.
Diphenyl-5:5'-dicarboxylic acid, 3:3'-dinitro-2:2'-dihydroxy-, A., 627.
2:5-Diphenyl-3:4-di-*p*-diphenylcyclopentadienone, A., 216.
2:5-Diphenyl-3:4-di-*p*-ethoxyphenylcyclopentadienone, A., 216.
Diphenyldiethylsilicane, and *di-m*-amino-, A., 1258.
Diphenyldifluorenone, and its dioxime, A., 213.
Diphenyldihydrophthalic acid, and its esters, A., 618.
2:6-Diphenyl-4-(2',4'-dimethoxyphenyl)pyrylium ferrichloride, A., 354.
5:5-Diphenyl-1:3-dimethylbarbituric acid, A., 1507.
3:6-Diphenyl-2:5-dimethyl-*p*-benzoquinone, 3:6-*di-m*-nitro-, A., 87.
2:2-Diphenyl-8:8'-dimethyldichromylene, A., 91.
1:2-Diphenyl-2:3-dimethyl-1:2-dihydronaphthalene, 1:4-*di*hydroxy-, A., 1501.
12:14-Diphenyl-4:8- and -2:6-dimethylquinacridones, A., 992.
Diphenyldi-1-naphthylallenes, A., 968.
2:5-Diphenyl-3:4-diphenacylfuran, A., 1500.
2:5-Diphenyl-3:4-di-*p*-phenoxyphenylcyclopentadienone, A., 216.
 $\alpha\beta$ -Diphenyl- $\alpha\beta$ -di-9-phenylanthracenyl-10-ethane, A., 1369.
2:5-Diphenyl-3:4-(2:2'-diphenylene)- Δ^4 -cyclopentadienone, A., 1242.
2:5-Diphenyl-3:4-(2:2'-diphenylene)- Δ^3 -cyclopentenone, and 2-hydroxy-, and its acetyl derivative, A., 1242.
2:5-Diphenyl-3:4-(2:2'-diphenylene)- Δ^4 -cyclopentenone, 3-hydroxy-, and its acetyl derivative, A., 1241.
1:4-Diphenyl-2:3:2':2'-diphenylenephthalic anhydride, manufacture of, (P.), B., 1133.
2:5-Diphenyl-3:4-di-*p*-phenylthiophenylcyclopentadienone, A., 216.
2:5-Diphenyl-3:4-di-*p*-isopropylphenylcyclopentadienone, A., 216.
 $\alpha\beta$ -Diphenyl- $\alpha\beta$ -di-2-pyridylethane, A., 990.
 $\alpha\beta$ -Diphenyl- $\alpha\beta$ -di-*p*-tolylethane- α -ol, A., 85.
2:5-Diphenyl-3:4-di-*p*-tolylcyclopentadienone, A., 216.
Diphenylene compounds, hydroxy-, and their derivatives, manufacture of, (P.), B., 585, 621.
Diphenylene oxide, A., 91, 867, 985.
nuclear substitutions in, and bromo- and nitro-amino-, and their acetyl derivatives, bromonitro-, dichloro-, mono- and *di*-iodo-, and nitro-, A., 91.
Diphenylene oxide, amino-, dibromo-, bromo-amino-, hydroxy-, and nitro- and hydroxy-, and their derivatives, A., 220.
1-amino-, and its derivatives, and 3-amino-, derivatives of, A., 986.
2-amino-, derivatives, 1-hydroxy-, and its derivatives, 1:8-*di*hydroxy-, and 1:8-*di*iodo-, A., 985.
dibromo-, and 2-chloro-7-nitro-, A., 1247.
2-hydroxy-, production of, (P.), B., 585, 621.
2:7-*di*hydroxy-, constitution of, A., 1504.
Diphenylene oxide series, A., 1247.
Diphenylene sulphide, ultra-violet absorption spectra of derivatives of, A., 680.
constitution of derivatives of, A., 627.
3-hydroxy-, (P.), B., 585, 621.
sulphoxides, 2- and 3-hydroxy-, (P.), B., 585.
Diphenylene-3-carboxylic acid, 2-hydroxy-, (P.), B., 585.
pp'-Diphenylenedi(diphenylmethyl) derivatives, electron affinity of, A., 1058.
9:9-Diphenylene-9:10-dihydrophenanthrene, A., 341.
Diphenyleneiodonium iodide, A., 79.
*di*iodo-, A., 1489.
1:1':3:3'-Diphenylenes, synthesis of, from dibenzoylmethane, A., 76.
Diphenylenesulphone, ultra-violet absorption spectra of derivatives of, A., 680.

- Diphenylenesulphone, 3-hydroxy-, (P.), B., 585, 621.
- 10:10-Diphenyleno-9:10-dihydrophenanthrene, 9-hydroxy-, A., 341.
- s*-Diphenylethane (*dibenzyl*), systems of, with diphenyl and naphthalene, A., 448.
- Di- β -phenylethylamine, and its hydrochloride, A., 1363.
- Diphenylethyleneimines, reactions of, A., 1378.
- $\alpha\beta$ -Diphenylethylene*l*thiolacetic acid, and its dimethyl ester, A., 1237.
- 4-($\beta\beta$ -Diphenylethyl)flavene, A., 1377.
- 3:5-Diphenyl-6-ethyl- Δ^2 -cyclohexenone-6-carboxylic acid, ethyl ester, A., 215.
- "Diphenylethylene ether." See "Keten diphenyl acetal."
- Di-(β -phenylethyl) ketone, *di*- β -hydroxy-, A., 981.
- $\alpha\gamma$ -Diphenyl- β -ethylpropane- $\alpha\gamma$ -diol, A., 199.
- 2:3-Diphenyl-5-ethylpyrimidazine, 7-chloro-, A., 1381.
- $\alpha\beta$ -Diphenylethylisoquinolinium bromide, β -hydroxy-, A., 1131.
- 1:3-Diphenylfluorene, A., 493.
- 2:5-Diphenylfuran, 2:5-*di*-*p*-bromo-, and *mono*- and *di*-chloro-2:5-*di*-*p*-bromo-, A., 352.
- Diphenyl-2-furylearbinol, A., 626.
- 3:5-Diphenyl-2-(1-furyl)-2:3-dihydro-1:3:4-thiadiazole, A., 1512.
- $\alpha\beta$ -Diphenyl- β -2-furylpropionic acid, and its ethyl ester and derivatives, A., 757.
- $\alpha\beta$ -Diphenyl- β -2-furylpropionitrile, A., 757.
- $\beta\beta$ -Diphenylglutaric acid, *di*- and *tetra*-hydroxy-, and their derivatives, and *di*-nitrodihydroxy-, A., 353.
- $\alpha\gamma$ -Diphenylglycerol, and its triacetyl derivative, A., 346.
- 2:4(5)-Diphenylglyoxaline salts, A., 1507.
- Diphenylguanidine salts, manufacture of, (P.), B., 93.
- dipyrocatechol borate, (P.), B., 841.
- $\alpha\zeta$ -Diphenylhexa- α -dione, $\alpha\zeta$ -*di*-2:4-*di*- and -2:4:6-*tri*-hydroxy-, A., 1372.
- $\alpha\zeta$ -Diphenylhexane, $\alpha\zeta$ -dioximino-, and its diacetyl derivative, and $\alpha\zeta$ -*di*- and $\alpha\alpha\zeta$ -*tetra*-nitro-, A., 346.
- 2:5-Diphenyl- Δ^2 -cyclohexenone, A., 622.
- Diphenylhydrobalata, β -dihydroxy-, and its *di*-*p*-nitrobenzoate, A., 1501.
- Diphenyl-3-hydroxy α etioallocholylearbinol, A., 1371.
- iso*Diphenylhydroxyethylamine, *dl*-*di*-*o*-chloro-, and its derivatives, A., 1234.
- Diphenylhydroxyethylamines, optically active, A., 1234, 1493.
- 3:5-Diphenyl-2-(4-hydroxy-3-methoxyphenyl)-2:3-dihydro-1:3:4-thiadiazole, A., 1512.
- Diphenyl-3-hydroxynorallocholylearbinol, A., 1370.
- 3:5-Diphenyl-2-(2-hydroxyphenyl)-2:3-dihydro-1:3:4-thiadiazole, A., 1512.
- Diphenyl-3-hydroxytrinorallocholylearbinol, A., 1371.
- Diphenyliodonium iodide, iodine linking in, A., 917.
- interchange of iodine atoms in, A., 1328.
- decomposition of, A., 829.
- 3:3-Diphenylsatin, 3':3"-dibromo- and 3':3"-dinitro-4':6':4'':6''-*tetra*hydroxy-, production of, (P.), B., 444.
- 3':3'-*di*- and 3':5':3'':5''-*tetra*-bromo- and 3':3'-dinitro-4':4''-*dihydroxy*-, manufacture of, (P.), B., 444.
- Diphenylketimines, hydroxy-, and their methyl ethers, ionisation constants of, A., 166.
- Diphenyl- β -maltoside, *p*-hydroxy-, *hepta*-acetate, A., 848.
- Diphenylmethane derivatives, production of, (P.), B., 182.
- use of, in Bunsen ice calorimeters, A., 57.
- Diphenylmethane, 3-amino-4-hydroxy-, and its hydrochloride, A., 1380.
- 5:5'-*di*amino-4:4'-*dihydroxy*-, and its dihydrochloride, A., 339.
- di*-*p*-hydroxy-, and their purgative properties, A., 80.
- Diphenylmethanes, manufacture of, (P.), B., 1131.
- 2:5-Diphenyl-3:4-(4'-methoxy-2:2'-diphenylene)- $\Delta^{2:4}$ -cyclopentadienone, A., 1242.
- dl*- $\alpha\alpha$ -Diphenyl- β -methyl-*n*-amyl alcohol, A., 1223.
- Diphenylmethylarsine dihydroxide, and its derivatives, structure and biological activity of, A., 531.
- $\alpha\gamma$ -Diphenyl- β -methyl- Δ^a -buten- γ -ol, A., 1125.
- Diphenylmethyl-1:2-naphthaquinone, tautomerism of hydroxy- α -naphthafuchsone and, A., 1243.
- $\alpha\alpha$ -Diphenyl- β -methylpentane, A., 1223.
- $\alpha\alpha$ -Diphenyl- δ -methyl- Δ^a -penten- γ -one, A., 616.
- $\alpha\alpha$ -Diphenyl- δ -methyl- $\Delta\beta$ -pentinene, α -chloro-, A., 616.
- $\alpha\alpha$ -Diphenyl- δ -methyl- $\Delta\beta$ -pentin- α -ol, A., 616.
- 2:6-Diphenyl-1-methyl-4-piperidone, 3-amino-, and its hydrochloride and oxime *p*-toluenesulphonate, (P.), B., 796.
- 2:4-Diphenyl-5:6-naphtho-(2':1')-isoxazine, and its acetyl derivative, and 3-nitroso-, A., 97.
- $\alpha\gamma$ -Diphenyl- γ -naphthylallene- α -carboxylic acid, and its brucine salt and carboxymethyl and methyl esters, A., 1363.
- $\alpha\gamma$ -Diphenyl- γ -naphthylbutyric acid, and its ethyl ester, A., 1363.
- 2:5-Diphenyl-3:4-(1:8-naphthylene)- $\Delta^{2:4}$ -cyclopentadienone, and its derivatives, A., 1242.
- 2:5-Diphenyl-3:4-(1:8-naphthylene)- Δ^4 -cyclopentenone, 3-hydroxy-, A., 1242.
- 2:5-Diphenyl-3:4-(nitro-2:2'-diphenylene)- Δ^4 -cyclopentenones, 3-hydroxy-, A., 1242.
- 2:2'-Diphenyl- $\Delta^{3:3'}$ -octahydrobenzoin, A., 978.
- Diphenylolpropane, manufacture of, (P.), B., 665.
- 3:5-Diphenyl-1:2:4-oxadiazole, 3:5-*di*-*p*-bromo-, A., 334.
- $\alpha\gamma$ -Diphenyl- $\beta\gamma$ -oxido- Δ^a -propylene, A., 1124.
- $\alpha\epsilon$ -Diphenylpenta- $\alpha\epsilon$ -dione, $\alpha\epsilon$ -*di*-2:4:6-*tri*-hydroxy-, A., 1372.
- $\beta\beta$ -Diphenyl-*n*-pentane, $\beta\beta$ -*di*-*p*-hydroxy-, A., 80.
- 2:5-Diphenyl-3:4-phenanthrenothiophen, A., 1378.
- Diphenylphenanthrylcarbinols, and their bromides, A., 622.
- Diphenylphenanthryl-2- and -3-methyls, and their peroxides, A., 622.
- 3':3''-Diphenylphenolphthalein, *di*bromo- and *dinitro*-, mercury derivatives of, (P.), B., 175.
- 3:5-Diphenyl-2-piperonyl-2:3-dihydro-1:3:4-thiadiazole, A., 1512.
- Diphenylpolyenes, absorption and fluorescence spectra of, A., 1443.
- optical absorption of, A., 1300.
- β -Diphenylpropane, 4:4'-dihydroxy-, and its derivatives, A., 1161.
- $\alpha\gamma$ -Diphenylpropane- $\alpha\beta$ -diol, β -cyano-, A., 1124.
- $\gamma\beta$ -Diphenyl-*n*-propanols, diastereoisomeric, preparation of, A., 340.
- $\alpha\gamma$ -Diphenylpropan- α -ol- β -one, and γ -chloro-, A., 1124.
- 2:4-Diphenylpyrimidine, 5-hydroxy-, and its salts, A., 1133.
- 12:14-Diphenylquinacridone, A., 992.
- 2:3-Diphenylquinoline, 4-chloro-, and 4-hydroxy-, A., 357.
- 1:1'-Diphenylrubene, and its oxide, A., 969.
- 1:1'-Diphenylrubene-3:3'-dicarboxylic acid, ethyl ester, and its dissociable oxide, A., 213.
- 3:4-Diphenylseleno- Δ^3 -cyclopentene 1:1-*di*-oxide, A., 100.
- Diphenylsemicarbazide, velocity of reaction of, with quinones, A., 709.
- 3:5-Diphenyl-2-styryl-2:3-dihydro-1:3:4-thiadiazoles, A., 1512.
- s*-Diphenylsuccinamide, reaction of, with alkaline sodium hypobromite, and *pp'*-*dinitro*-, A., 212.
- Diphenylsuccinic acid, butyl and butyl hydrogen esters, A., 490.
- Diphenylsuccinic anhydrides, reaction of, with butyl alcohol and aniline, A., 489.
- 3:4-Diphenylsuccinimide, reaction of, with alkaline sodium hypobromite, A., 212.
- Diphenylsulphone, 4'-bromo- and 4'-chloro-2:4:3'-trinitro-, 2':5'-dichloro-2:4-*di*-nitro-, and 2:4:3'-trinitro-, A., 739.
- chloronitroamino- and nitroamino-derivatives, and their derivatives, A., 485.
- 2-nitro-2'-amino-, 2'-benzoyl derivative, A., 615.
- Diphenyl-4-sulphonic acid, sodium salt, production of, (P.), B., 939.
- Diphenyl-2-sulphonyl chloride, 5-bromo-, A., 627.
- $\beta\beta$ -Diphenylsulphonylacetophenone, A., 494.
- as*-Diphenylsulphonyldiphenylethane, A., 494.
- Diphenylthiobarbituric acid, preparation of, and its use in determination of furfuraldehyde, A., 370.
- $\alpha\beta$ -Diphenyldithiobiuret, $\alpha\beta$ -*di*-*p*-bromo-, A., 1488.
- Diphenylthiocarbamide, reaction of, with sodiomalonic ester, A., 205.
- Diphenylthiocarbazone. See Dithizone.
- 2:2'-Diphenylthiocarboyanine, 2:2'-*di*-*o*-nitro-, iodide, A., 1511.
- 4:4'-Diphenylthiolbenzil, A., 216.
- Di(diphenylthiol)diphenylstannane, A., 73.
- 1:3-Diphenyl-4:5-thionaphthenopyrazole, A., 764.
- 2:4-Diphenyl-1:2:3-triazole, 5-amino-, and its benzoyl and benzylidene derivatives, A., 763.
- Diphenyl triketone, catalytic hydrogenation of, A., 346.
- Diphenyltrimethylammonium salts, and their reduction by sodium amalgam, A., 76.
- 1:3-Diphenyl-9-(2:4:6-triphenyl)fluorene, A., 493.
- $\beta\beta$ -Diphenylvinyl *tert*-.butyl ketone, and its oxime, A., 862.
- Diphenylvinylethynylcarbinol, manufacture of, (P.), B., 347.
- Diphenyl-2-acetic acid, ethyl ester, A., 1496.
- 4-Diphenylamino-5-acetamidanthraquinone-2-sulphonic acid, 1:4'-*di*amino-, 4'-acetyl derivative, (P.), B., 895.
- Diphenylazotridiphenylmethane, and its decomposition, A., 77.
- p*-Diphenyl-*p*-benzoquinone, A., 86.
- p*-Diphenyl ethyl ketone derivatives, A., 973.

- S*-Diphenyl-2-oxytrichloromethylthiol, A., 854.
- α -Diphenylpropyl alcohol, β -amino-, and its hydrochloride, A., 486.
- p*-Diphenylquinol, A., 87.
- Diphosphoglyceric acid, action of, with hemolysed erythrocytes and tissue juices, A., 403.
- biochemical degradation of, A., 659.
- $\alpha\delta$ -Dipthalimido- γ -hydroxyvaleric acid, preparation of, A., 606.
- lin*-Dipthaloyldiphenylenemethane sulphide, A., 504.
- 1:2:7:8-Dipthaloylphenanthridone, A., 348.
- Dipthalylsemicarbazide, A., 619.
- Diphtheria, ascorbic acid of adrenals in, A., 1527.
- blood-phosphorus in, A., 519.
- corpus luteum formation in, A., 1527.
- toxin-antitoxin flocculate in, A., 536.
- anatoxin, preparation of, A., 256.
- anatoxin and toxin, purification of, A., 1028.
- antitoxin, recovery of, from the coagulated complex, A., 536.
- stabilisation and recovery of, after flocculation, A., 787.
- precipitation of, from metal-protein complexes, A., 1003.
- antitoxin and toxin, effect of sodium aminonaphthalenetrisulphonates on, A., 1020.
- toxin, culture media for, A., 1419.
- spectrum of, A., 787.
- increase of antigenic power of, A., 1003.
- action of bile acids on, A., 1395.
- combination of, with blood-proteins, A., 105.
- influence of moranyl compounds on, A., 408.
- action of organic compounds on, A., 665.
- inactivation of, by vitamin-C, A., 1429.
- destruction of vitamin-C by, A., 1036.
- azotemia from injection of, A., 1527.
- toxoid, purification of, A., 1028.
- formol toxoid, Moloney test for, A., 1168.
- vaccine, adsorption of, by aluminium hydroxide, A., 1003.
- experimental, physiology of, A., 383.
- toxic, sugar tolerance and insulin value in, A., 650.
- Dipicrylamine, detection with, of caesium, potassium, and rubidium, A., 1472.
- Dipidine derivatives, A., 629.
- $\alpha\gamma$ -Dipiperidinobutane, and its picrate, A., 478.
- Di-(α -piperidino- γ -butyl)amine, and its salts, A., 478.
- $\alpha\kappa$ -Dipiperidinodecane, and its hydrochloride, A., 71.
- Dipiperidinoethylarsine dihydrochloride, A., 1139.
- 2- $\beta\beta'$ -Dipiperidinoisopropylpyridine, and its derivatives, A., 499.
- Diplogen. See Deuterium.
- Diploicin, and its acetyl derivative, A., 133.
- Diplons, quantum theory of, A., 279.
- collisions between neutrons and, A., 802.
- Diploschistes scruposus*, acid from, A., 748.
- Diploschistessic acid, constitution of, A., 748.
- Dipole apparatus, A., 598.
- Dipole compounds, allotropy of, A., 572.
- Dipole moments, A., 1306.
- determination of, in solution, A., 13.
- solvent effect in measurements of, A., 567.
- calculation of, A., 808.
- vector analysis of, A., 13.
- Dipole moments, and Raman effect in relation to free rotation, A., 12, 428.
- relation of, to activation energy, A., 1191.
- to free rotation, A., 281.
- and molecular properties, A., 916.
- of associated liquids, A., 683.
- of associated molecules, A., 430, 927.
- of isotopic molecules, A., 1304.
- of molecules with movable dipoles, A., 916.
- and structure of organic compounds, A., 976.
- in solution and in vapour state, A., 916.
- of vapours, A., 1056.
- Dipolymethylenoanthracenes, derivatives of, A., 1243.
- Dipropionyl peroxide, action of nitric acid on, A., 730.
- 2:4-Dipropionyl- α -naphthol, A., 484.
- 2:6'-Dipropoxy-5:3'-azoxypyridine, A., 498.
- $\beta\beta$ -Dipropoxyheptane, electric moment of, A., 683.
- 2:6-Dipropoxy-7-methylpurine, A., 1509.
- Di-*n*-propyl ether, equilibrium of, with propyl alcohol and water, A., 1349.
- diselenide, A., 959.
- sulphide, $\gamma\gamma'$ -dichloro- $\beta\beta'$ -dihydroxy-, A., 729.
- Diisopropyl ether, $\beta\beta'$ -dibromo-, A., 471.
- β -(β -Di-*n*-propylaminoethoxy)ethyl alcohol, and its esters, A., 1363.
- as*-Dipropylcarbamide, di- β -hydroxy-, A., 1155.
- Di-*n*-propylcyanogold, A., 1112.
- Di-*n*-propyldicyanogold, A., 1112.
- 2:6-Di-*n*-propyl-2:6-diisopropylcyclopentane, and its derivatives, A., 621.
- $\beta\beta$ -Dipropylglutaric acid, methyl ester, A., 65.
- Diisopropylideneglucose 1-bromoacetate, A., 1108.
- salts and potassium derivative of, A., 68.
- Diisopropylidenelactofavin, A., 760.
- $\alpha\beta\zeta$ -Diisopropylidenemannitol $\gamma\delta$ -di-*p*-toluenesulphonate, A., 194.
- l-Diisopropylidenesorbitose, (P.), B., 606.
- 1:2:5:6-Diisopropylidenetalofuranose, A., 734.
- Di-*n*-propyl ketone, photochemical decomposition of, A., 1468.
- Diisopropyl ketone, reaction of, with ethyl nitrite, A., 1481.
- NN-Di-*n*-propyl-*p*-phenetidine, NN-di-(γ -chloro- β -hydroxy-), A., 614.
- 2:5-Dipropylpropiophenone, A., 612.
- NN-Di-*n*-propylthiocarbamic acid, nickel salt, A., 980.
- Di-*n*-propyl thioketone, A., 1107.
- 2:4-Diisopropyltoluene, and 2- and 4-amino-, and their derivatives, and 2- and 4-nitro-, A., 739.
- 2:6-Diisopropyltoluene, 4-amino-, and its derivatives, and 4-nitro-, A., 612.
- 4:6-Diisopropyltoluene, 2-amino-, and its derivatives, and 2-nitro-, A., 612.
- 2:6-Diisopropyltoluene-4-sulphonic acid, A., 612.
- Dipropylvinylethynylcarbinol, manufacture of, (P.), B., 347.
- 2:2'-Dipyridyl, preparation of, and its derivatives, A., 630.
- synthesis of, and its complex salts, A., 759.
- complex cadmium and zinc salts with, A., 312, 714.
- complex salts of copper and, A., 167.
- 2:2'-Dipyridyl, 6:6'-diamino-, and its picrate, A., 630.
- $\alpha\beta$ -Di-(4-pyridylamino)ethane, $\alpha\beta$ -di-3-amino-, and $\alpha\beta$ -di-3-nitro-, and its dihydrochloride, A., 993.
- 2:2'-Dipyrryldinitrosaclys, dinitro-, A., 221.
- 4:4'-Diquinolyl, 2:2'-dicyano-, and 2:2'-dihydroxy-, A., 93.
- 4:4'-Diquinolyl-2:2'-dicarboxylic acid, and its diamide, A., 93.
- N-Di(quinolyl-8-methyl)-*p*-aminoacetanilide, A., 1251.
- Di(quinolyl-8-methyl)ethylamine, and its trihydrobromide, A., 1251.
- Diquinolylphthalides, α -8:8'-dihydroxy-, and their salts and derivatives, A., 500.
- Diradicals, A., 689, 1116.
- photochemical formation of, A., 986.
- Disaccharides in "hydroly," A., 964.
- determination in, of glucose, A., 1484.
- Disalicylideneacetone, salts of, A., 1371.
- Disazo-compounds, for therapeutic use, production of, (P.), B., 895.
- Disazo-dyes, preparation of, from *m*-phenylenediamine, A., 743.
- manufacture of, (P.), B., 1134.
- and their intermediates, (P.), B., 220.
- for acetate silk, manufacture of, (P.), B., 220, 796.
- for leather, manufacture of, (P.), B., 717.
- direct, manufacture of, (P.), B., 941.
- green, manufacture of, (P.), B., 15.
- insoluble in water, manufacture of, (P.), B., 1086.
- DiscoGLOSSUS pictus*, substances like auxins in development of, A., 1289.
- Disease, diet in relation to, A., 774.
- calcareous, A., 382.
- deficiency, therapeutic agent for, (P.), B., 46.
- finger and toe, control of, B., 74.
- infectious, acetonuria in, A., 775.
- alimentary glycosuria in, A., 108.
- blood-phosphorus in, A., 519.
- carbohydrate metabolism in, A., 108.
- internal, blood-sugar in, A., 1010.
- of the extrapyramidal system, effect of muscular work on metabolism in, A., 886.
- Diselenodicarboxylic acids, reaction of, with mercury, A., 962.
- Disiloxan, hexachloro-, reaction of, with acetylacetone, A., 333.
- Disinfectants, (P.), B., 336.
- manufacture of, (P.), B., 288, 608, 704, 928.
- vaporisation of, (P.), B., 176.
- stimulating action of, A., 1420.
- fungicides and, (P.), B., 784.
- use of, (P.), B., 576.
- for air, (P.), B., 176.
- for breweries and maltings, B., 203.
- for plants, production of, (P.), B., 518.
- containing hydrofluoric acid, bactericidal activity of, B., 976.
- liquid, (P.), B., 704.
- oleaginous, production of, (P.), B., 656.
- powdered, production of, (P.), B., 832.
- containing silver, manufacture of, (P.), B., 524.
- solidified, production of, (P.), B., 701.
- Chick-Martin test for, B., 480.
- bacteriological evaluation of, B., 656.
- Disinfection, "Elmocid" process of, B., 704.
- with formaldehyde, B., 832.
- in partial vacuum, B., 127.
- Disintegration apparatus, (P.), B., 50, 210, 435, 1074.
- Disperse systems. See under Systems.
- Dispersing agents, (P.), B., 627.
- manufacture of, (P.), B., 14, 59, 92, 139, 263, 619, 664, 665, 939, 940, 985, 1131.
- colloidal electrolytes as, B., 296.

- Dispersion, rotary, determination of, by rotating prism method, A., 684.
 photographic measurement of, A., 1475.
 of chemical analogues, A., 1056.
 of carbohydrates, and their derivatives, A., 568.
 of organic compounds, A., 809, 1305.
- Dispersions, production of, (P.), B., 295, 665, 930.
 apparatus for, (P.), B., 50.
 electro-optical measurement of concentration of, (P.), B., 596.
 photomicrography of, A., 1340.
 aqueous, maintaining homogeneity of, (P.), B., 84.
 bituminous. See Bituminous dispersions.
- Dispersoids, minerals, wetting power of, A., 1071.
- Dissociation constants of acids in light and heavy water, A., 1203.
 of carboxylic acids, A., 581.
 effect of substituents on, A., 1076.
 of weak and moderately strong electrolytes, A., 34, 1203.
 of organic acids, A., 1076.
 of polybasic acids, A., 934.
- Distictanilide, A., 214.
- Distillation, (P.), B., 482, 882.
 historical development of plant for, B., 257.
 apparatus for control of pressure in, A., 321.
 use of sintered glass discs in, A., 599.
 separation of condensates in, (P.), B., 754.
 of dilute solutions of volatile substances, B., 609.
 fractional, B., 1025; (P.), B., 788, 883, 1027, 1076.
 under reduced pressure, A., 321.
 temperature-control device for, (P.), B., 532.
 effect of entrainment on plate efficiency in, B., 82.
 efficiencies of packed columns for, B., 577.
 of small quantities of liquid, A., 1477.
 laboratory, electric furnaces for, B., 67.
 vacuum, (P.), B., 84, 290, 579, 754, 1026, 1076.
 application of Ponchon graphical analysis to, B., 577.
- Distillation apparatus, A., 321; (P.), B., 388, 579, 883, 1026, 1076.
 bubble caps for, (P.), B., 883.
 rectifying columns for, (P.), B., 4.
 reflux towers for, (P.), B., 387.
 entrainment in plate columns of, B., 530.
 for crude oils, etc., (P.), B., 610.
 column, B., 529.
 glass helices for, A., 840.
 laboratory column, A., 724.
 fractional, B., 529; (P.), B., 930, 977.
 design of, B., 577.
 packing of columns for, (P.), B., 754.
 Young and Thomas columns for, (P.), B., 977.
 efficiency of perforated plates in, B., 289.
 effect of entrainment on plate efficiency in, B., 530.
 for organic liquids, A., 1098.
 laboratory, efficiency of, B., 839.
 tower, (P.), B., 387, 883.
 micro-, A., 1098.
 vacuum, A., 59, 1098; (P.), B., 4, 659.
- Distilleries, purification of fermentation gases from, B., 604.
 bacteriological purification of slops from, B., 696.
- Distilleries, water purification in, B., 76.
 efficiency of saccharification in, B., 1160.
 spent wash from, as supplementary feed for milch cows, B., 379.
 analysis of spent washes from, B., 569.
 beet, oils for prevention of frothing in, B., 871.
- Distillery mash, determination of extract of, B., 1016.
- 1:3-Distyrylbenzene, 6:4-diamino-, 4-acetyl derivative, and its derivatives, and 4:6-diamino-1:3-di-*m*-amino-, A., 1505.
- Distyryl ketones, unsymmetrical, reactivity of, A., 85.
- Distyryl ketones, chloro-4'-hydroxy-, A., 85.
- 4:6-Distyryl-*m*-dinitrobenzene, 4:6-di-(3'-nitro)-, A., 619.
- Di- κ -sulphatodecyl disulphide, (P.), B., 1131.
- Disulphides. See diSulphides.
- $\alpha\alpha$ -Disulphido-di- ϵ -aminohexoic acid, A., 851.
- $\alpha\alpha$ -Disulphido- $\epsilon\epsilon$ -diguanidinohexoic acid, A., 851.
- $\alpha\alpha$ -Disulphido- $\epsilon\epsilon$ -di(phenylcarbamido)hexoic acid, A., 851.
- $\beta\beta$ -Disulphobutyric acid, and its salts, A., 1107.
- $\beta\beta$ -Disulphodiethyl ether, and its salts, A., 472.
- $\beta\beta$ -Disulphoglutaric acid, and its salts, A., 962.
- $\beta\beta$ -Disulphopropionic acid, and its salts, A., 1107.
- Diterpene alcohol from *Dacrydium biforme*, A., 1127.
- Diterpene alcohols, primary, manufacture of, (P.), B., 57.
- Diterpene oxides, from *Dacrydium Colensoi* resin, A., 351, 496.
- 1:3:5-Dithiazan, 4:6-diimino-, and its hydriodide, A., 1512.
- Dithiazine rings, A., 1512.
- Dithienyl sulphide, A., 1249.
- Dithienylsulphone, A., 1249.
- $\beta\beta$ -Dithiolactic acid, heat of combustion of, A., 304.
- Dithizone, metallic derivatives, absorption spectra of, A., 1052.
 detection of flash-pasteurised milk with, B., 43.
- 6:6'-Di-*p*-toluenesulphonamido-2:2'-ditolyl, A., 870.
- NN'*-Di-*p*-toluenesulphonyl-6:6'-di(methyl-amino)-2:2'-ditolyl, A., 870.
- Di-*p*-toluenesulphonylphenylethanes, A., 1115.
- 3:4- and 3:9-Di-*p*-toluoylperylene, A., 1370.
- 2:2'-Ditolyl, 6:6'-dihydroxy-, and its esters, A., 757.
- 3:3'-Ditolyl, 2:2'-dihydroxy-, and its esters, A., 757.
- 4:4'-Ditolyl, 2:6-dibromo-3:3'-diamino-, synthesis of, A., 742.
- 2:6-dibromo-3:3'-diamino-derivatives and their camphorsulphonates, 2:6-dibromo-3'-nitro-3-amino-, and 3-nitro-3'-amino-, A., 743.
- 2:2'-dihydroxy-, and its esters, A., 757.
- Ditolyls, hydroxy-, and their derivatives, A., 1361.
- Ditolyl ethers, A., 1361.
 ethylene glycol ethers, and dibromo-, A., 614.
- 1:2-Di-*p*-tolylazeperylene, A., 1370.
- 2:3-Di-*p*-tolyl-5:6-dihydropyrazine, A., 862.
- 2:2'-Di-(*o*-tolyl)diphenyl, A., 211.
- Di-*m*-tolylethane, properties of, B., 538.
- Di-*o*-tolylguanidine dipyrocatechol borate, (P.), B., 841.
- 4:6-Ditolylimino-1:3:5-dithiazans, and their hydrobromides, A., 1512.
- 4:6-Di-*p*-tolylimino-2-phenyl-1:3:5-dithiazan hydrochloride, A., 1512.
- 3:3-Di-*m*-tolylisatin, 5'-5''-dibromo- and 5':5''-dinitro-6':6''-dihydroxy-, production of, (P.), B., 444.
- s*-Di-*p*-tolylthioethane, manufacture of, (P.), B., 621.
- Di-*p*-tolyl thioketone, A., 1241.
- Di-(2:4:6-trimethylstyryl) ketone, A., 493.
- m*-Di(triphenylmethylazo)benzene, A., 78.
- 2:3-Di(triphenylmethylazo)naphthalene, A., 78.
- $\alpha\zeta$ -Ditriphenylmethyl- $\beta\delta$ -benzylidenesorbitol, and its diacetate, A., 1222.
- 2:2'-Di(triphenylmethylhydrazino)diphenyl, A., 78.
- 2:3-Di(triphenylmethylhydrazino)naphthalene, A., 78.
- Dityrosyltyrosine hydrochloride, A., 1014.
- Diuresis, effect of acids and alkalis on, A., 652.
 effect of diet on, A., 1524.
 action of germanin on, A., 781.
 diuretin, salt and water losses in, A., 1158.
- Diuretics, effect of, on creatinine excretion, A., 106.
- 2:2'-Di-*n*-valeryl diphenyl, A., 348.
- Divanillic acid, A., 1237.
- Divanillin hexaacetate, A., 1498.
- Divaric acid, synthesis of, and its methyl ester, A., 977.
- Divaricatic acid, hydroxy-synthesis of, A., 977.
- Divertraldehyde and its dioxime, A., 1498.
- Divining rod, action of "erdstrahlen" on, A., 600, 1212.
- Divinyl ether as analgesic and anæsthetic, A., 893.
- 1:2-Divinylenetetrahydropyrimidine, 5-hydroxy-, salts, A., 627.
- Divinylphenylarsine, di- β -chloro-, A., 1515.
- Dixanthyl derivatives, electron affinities of, A., 1058.
- Dixanthyl, 9:9'-dihydroxy-, diperchlorate, A., 91.
- Dixanthyl-di- α -naphthylethane, degree of dissociation of, in benzene solution, A., 149.
- Dixanthylparabanic acid, A., 869.
- s*-Di-*p*-xenylcarbamide, preparation of, A., 206.
- Di-*p*-xenyketen, synthesis of, A., 751.
- 1:5-Di-*m*-xyloylanthracene, A., 992.
- 1:5-Di-*m*-xyloylanthraquinone oximes, and their dehydration and cyclisation, A., 992.
- Djenkol beans. See under Beans.
- Djenkolic acid, and its derivatives, A., 966.
- Dodecahydrobenzanthracene, crystal structure of, A., 1061.
- 1:2:3:4:5:6:7:8:1':2':3':4'-Dodecahydro-1:2-benzanthracene, A., 1117.
- 1:2:3:4:5:6:7:8:1':2':3':4'-Dodecahydro-1:2-benzanthryl-5-acetic acid, A., 1117.
- Dodecahydrocholanthrene, A., 1117.
- Dodecahydro-1:2:3:4-dibenzanthraquinone, and 5:8-dihydroxy-, diacetyl derivative, A., 1244.
- Dodecahydro-5:6:7:8-dibenz-1:4-naphthaquinone, A., 1244.
- Dodecahydrophenanthrene-9:10-dicarboxylic anhydride, A., 1244.
- Dodecahydrostrychnines, A., 367.
- Dodecane- $\alpha\omega$ -dicarboxylic acid, α -hydroxy-, A., 195.
- Dodecodilactone, λ -hydroxy-, A., 1351.
- n*-Dodecic acid, potassium salt, density of aqueous solutions of, A., 817.

- Dodecolactone, λ -hydroxy-, A., 1351.
Dodecotrilactone, λ -hydroxy-, A., 1351.
Dodecyl bromide, preparation of, A., 193.
chloride, A., 474.
nitrate, Raman effect of, A., 429.
thiocyanate, A., 479.
n-Dodecylaniline, and its hydrochloride, A., 70.
 α -Dodecyl- γ -butyrolactone, A., 474.
Dodecylisocarbamide hydrochloride, production of, (P.), B., 589.
Dodecyl- β -diethylaminoethylamine, (P.), B., 940.
Dodecylmalonic acid, diethyl ester, A., 474.
m-Dodecyloxyphenyl β -diethylaminoethyl ether, (P.), B., 1132.
1-*n*-Dodecylpiperidine, and its hydrochloride, A., 70.
Dogs, hydrolysis, oxidation, and energy exchanges in, A., 522.
phosphorus compounds in perfused hind limbs of, A., 521.
young, increasing chloride content of, A., 115.
Dog-fish, insulin excretion on, A., 891.
Dog-rose fruits, vitamin-C in, A., 546.
Dolomite, degree of hydration of magnesium oxide in, B., 354.
production of magnesia and nitrogenous fertilisers from, (P.), B., 672.
treatment of molasses with, B., 823.
use of, in mortar, B., 675.
refractory properties of mixtures of kaolin and, B., 22.
semi-micro-analysis of, A., 1095.
Donoxine, and its salts, A., 634.
Dopa-reaction, influence of, by vitamin-C, A., 670.
Doppler effect, A., 1053.
in light scattering in liquids, A., 1445.
Dosage over the maximum, A., 243.
Double decomposition, in absence of solvent, A., 168.
Dough, preparation for use in, (P.), B., 332.
treatment of, (P.), B., 700.
apparatus for, (P.), B., 1116.
bleaching of, (P.), B., 379.
bleaching agent for, (P.), B., 286.
shortening of, (P.), B., 827.
physico-mechanical properties of, B., 1115.
plasticity of, A., 579.
action of oxidants on, B., 475.
effect of mixing and fermentation on protein structure and colloidal properties of, B., 1018.
measurement of gas production and expansion in, B., 697.
gas retention and gluten content of, B., 570.
soluble matter in flour, bread, and, B., 824.
production of starch and glutinous materials from, (P.), B., 694.
sugars of flour and, B., 746.
bread, free and bound water in, B., 1018.
egg-, lecithin-phosphate content of, B., 570.
testing of, (P.), B., 700.
Draff, distillation of liquids containing, B., 170.
Draw-moss, composition of, B., 922.
Dressings, germicidal, production of, (P.), B., 877.
Driers, B., 815.
production of, (P.), B., 511.
historical survey of, B., 366.
for oils, paints, and varnishes, (P.), B., 366.
for printing ink, B., 684.
for varnishes, etc., B., 1055.
Driers, solid, precipitation of, B., 860.
soluble, for paints, and varnishes, (P.), B., 1004.
determination of inorganic constituents of, B., 238.
Drierite, use and regeneration of, A., 1342.
Drills, rotary, p_H control of liquids for, B., 837.
Drops, hydroscopic, nature of nucleus in, A., 1073.
liquid, mechanism of division of, A., 1073.
Drosera capensis, nutrient intake and transport in leaves of, A., 1178.
Drosera rotundifolia. See Sundew, round-leaved.
Drosera Whittakeri, colouring matters, A., 623.
Droserone, and its oxime, A., 420.
and hydroxy-, and its diboroacetate, A., 623.
triacetate, hydroxy-, absorption spectrum of, A., 347.
Drosophila, calcium and sodium requirements of, A., 1017.
Drosophila virilis, chromosomes from salivary glands of larvae of, A., 1266.
Drought, world, periods of, A., 60.
Drugs, synthesis of, A., 226.
extraction of, B., 252, 876, 973, 1068.
apparatus for, (P.), B., 254.
preparation of sterile solutions of, for injection, B., 572.
thermal analysis and eutectics of mixtures of, B., 923.
use of, *in vitro*, A., 257, 1542.
individual variation in response to, A., 1409.
distribution and excretion of, A., 394.
absorption of, through oral mucosa, A., 1018.
action of, on liver-glycogen, A., 1156.
on electrical excitation of blood-vessels, A., 1018.
antagonism of, in iris epithelium cultures, A., 984.
amebicidal, effect of, on tissue culture cells, A., 1161.
Chinese, vitamin-C in, A., 903.
depressant and stimulating, effect of, on central nervous system, A., 1158.
containing hydroxymethylanthraquinone and galenicals, detection of, by Born-träger's reaction, B., 429.
Tillmans' "chloramine value" of, B., 1068.
determination of, of alkaloids, B., 653.
of essential oils, B., 286, 1068.
Dry-cleaning, (P.), B., 1140.
baths for, B., 301.
solvents for. See under Solvents.
of textiles, (P.), B., 898.
Dryers, (P.), B., 83, 337, 385.
for chemicals, etc., (P.), B., 289.
for cloth, paper, etc., (P.), B., 224.
cylinder, (P.), B., 786.
rotary, (P.), B., 1073.
rotary drum, (P.), B., 49.
spray, B., 785.
design and operation of, B., 129.
Drying, ovens for, (P.), B., 578.
velocity and temperature curves of, B., 529.
temperature of material and rate of evaporation of moisture in, B., 433.
of gases, B., 337.
of gelatinous materials, (P.), B., 864.
of granular materials, (P.), B., 177.
of hydroscopic materials, (P.), B., 83.
of liquids and semi-solids, (P.), B., 579.
Drying of materials susceptible to over-heating, (P.), B., 386.
of sludges, etc., (P.), B., 337.
of solids, B., 209, 221, 227, 531, 1025, 1121, 1142, 1149; (P.), B., 1073.
intensive, A., 451.
effect of, on inner equilibrium, A., 437.
Drying agents, magnesium perchlorate as, A., 321.
Drying apparatus, B., 1073; (P.), B., 2, 49, 337, 386, 434, 753, 1073.
for cement, lime, etc., (P.), B., 657.
for foods, wood, etc., (P.), B., 929.
for ores, etc., (P.), B., 810.
for broken stones, ores, etc., (P.), B., 434.
rotary drum, (P.), B., 257.
spray, (P.), B., 385, 1073.
Drying machines, (P.), B., 531.
for laundries, (P.), B., 99.
Duboisia Hopwoodii, alkaloid from, A., 1136.
Ducks, influence of proteins on growth of, A., 388.
metabolism of. See under Metabolism.
wild, pathology of, A., 1021.
Ductility, bend test for, B., 1121.
Dulcine, detection of, B., 330.
Dulcitol, isomeric, synthesis of, A., 63.
Dumortierite, effect of repeated firing on, B., 768.
Dung, horse, cellulose fermenters from, B., 372.
Dunite, use of, in ceramics, B., 453.
Duodenal juice, nitrogen and protein content of, A., 379.
Duodenin, A., 411.
Duodenum, composition of mixed secretions from, A., 379.
 p_H of contents of, A., 884.
in absence of bile and of pancreatic juice, A., 1006.
secretion in, in relation to sugar metabolism, A., 1006.
effect of hydrochloric acid in, on absorption of glucose, A., 892.
component antagonistic to insulin in, A., 1172.
function of, in relation to sugar tolerance, A., 1016.
human, composition of juice from, A., 513.
pig's, enzymes in mucosa of, A., 1025.
Durain, B., 436.
coking properties of, B., 130.
Duralplat, corrosion of, B., 553.
Duralumin, heat treatment of, (P.), B., 274.
corrosion-fatigue properties of, B., 312.
anodic oxidation and protection of, in salt solutions, B., 28.
accelerated corrosion tests on, in salt solutions, B., 311.
paints for, in aeroplanes, B., 194.
occurrence of copper-aluminium compound in, B., 65.
plated, effect of heat-treatment on corrosion resistance of, B., 955.
spectrometric analysis of, B., 65.
determination in, spectroscopically, of iron, magnesium, manganese, and silicon, A., 317.
of magnesium, manganese, silicon, and iron, spectroscopically, B., 361.
Durene, bromo-, nitration of, A., 1114.
Duroyl bromide, dinitro-, structure of, A., 1114.
Durylyl chloride, dinitro-, A., 1114.
Dust or Dusts, direct photography of, in air, A., 320.
extraction apparatus for, (P.), B., 755.

Dust or Dusts, collectors for, (P.), B., 210.
 filters for, for respirators, (P.), B., 5.
 removal of, from gases, (P.), B., 883.
 apparatus for, (P.), B., 1077.
 from air, apparatus for, (P.), B., 931.
 from workroom atmospheres, B., 430.
 apparatus for separation of, (P.), B., 84.
 centrifugal separation of, from air and gases, (P.), B., 659.
 apparatus for, from gases, (P.), B., 931.
 electrical precipitation of, B., 681.
 electrostatic precipitation of, from gases, B., 910.
 in working of pulverised-fuel boilers, B., 705.
 in the organism, A., 1396.
 impregnation of the organism by, A., 1270, 1527.
 of Georgia talc, injury by, B., 926.
 siliceous, analysis of, B., 526.
 causing silicosis, B., 832.
 sampling of, B., 81.
 filters for, B., 81, 209.
 analysis of, by X-ray diffraction, A., 317.
 detection in, of iron, lead, and tar, B., 526.
 determination of, in air, A., 467.
Dwarfs, renal, pathogenesis of, A., 383.
Dyes, colour and molecular structure of, A., 1119.
 classification of, B., 796.
 manufacture of, (P.), B., 722, 842, 895.
 from alkylene oxides, (P.), B., 349.
 from diazoimino-compounds, (P.), B., 1086.
 from nitroarylaminoarylamines, (P.), B., 665.
 on the fibre, (P.), B., 59.
 and their amides, (P.), B., 829.
 manufacture of pastes of, for copying papers, typewriter ribbons, etc., (P.), B., 15.
 relation between absorption spectra and chemical constitution of, A., 338.
 absorption and luminescence spectra of weak solutions of, A., 808.
 extinction of fluorescence of, A., 1211.
 influence of potassium iodide on polarisation of fluorescence of, in solutions, A., 12.
 time decrement of fluorescence of solutions of, A., 915.
 polarisation of phosphorescence of solutions of, A., 915, 1302.
 temperature optima of phosphorescent solutions of, A., 1055.
 photopotential of, A., 429.
 electrophoresis of, A., 1321.
 absorption of, by kaolin suspensions, A., 819.
 absorption and valency in chemistry of, A., 857.
 adsorption of, on nickel wire, A., 929.
 adsorption and dispersion of, A., 1072.
 diffusion of, A., 299.
 diffusion coefficients of, A., 580.
 nature of aqueous solutions of, A., 299.
 pipette method for determination of grain size of, B., 609.
 determination of substantivity of, B., 19.
 apparatus for determination of change of colour of, (P.), B., 1004.
 light-fastness of, on vegetable fibres, B., 945.
 determination of light-fastness of, B., 1090.
 apparatus for, (P.), B., 533.
 fading of, B., 1090.
 in rays of different intensities, B., 670.

Dyes, change in concentration of, in dye-baths, B., 492.
 action of hot sulphuric acid on, B., 94.
 influence of atmospheric sulphur on fabrics and, B., 540.
 standardisation of, (P.), B., 941.
 stabilisation of suspensions of, (P.), B., 896.
 stripping of, (P.), B., 1041.
 fog formation by, A., 1087.
 fogging of photographic emulsions by, B., 607.
 fogging of photographic plates by, B., 783.
 manufacture of intermediates for, (P.), B., 93, 140, 263, 585.
 determination of intermediates for, by coupling, B., 584.
 staining with acids and bases from, A., 268.
 staining of plant cells by, A., 1043.
 chemotherapy of, A., 529.
 toxicity of, B., 298.
 for hair, B., 847.
 for half-wool piece goods, B., 847.
 for injections, B., 523.
 for lacquers, silk, and wool, manufacture of, (P.), B., 942.
 for leather, (P.), B., 349.
 on paper, fastness to light of, B., 222.
 for rayon artificial silk, B., 847.
 for synthetic resins, (P.), B., 57.
 for rubber, (P.), B., 1155.
 for coloured smokes, B., 207.
 for toys, B., 847.
 identification of, B., 796.
Dyes, acid, printing of paper with, B., 143.
 for wool, constitution and levelling properties of, B., 352.
 affinity of deaminated wool for, B., 353.
 blue, for wool, manufacture of, (P.), B., 94.
 acid and basic, colloidal properties of, in relation to chemotherapeutic power, A., 120.
 adsorbed on colloids, absorption spectra of, A., 1052.
 basic, from lichens, B., 762.
 adsorption of, on cellophane, A., 697.
 manufacture of insoluble compounds of, (P.), B., 141.
 determination of, with phosphotungstic acid, B., 298.
 "benzo fast copper," use of, B., 721.
 chemotherapeutic, action of, A., 1539.
 containing chromium, manufacture of, (P.), B., 15.
 coal-tar, detection of, in coffee substitutes, B., 428.
 in hens' eggs, B., 875.
 desensitising, B., 298.
 direct, dyeing of viscose rayon by, B., 302.
 fluorescent, activation of oxygen by, A., 681.
 halochromic, A., 857.
 indigoid, A., 1249.
 of indirubin type, synthesis of, A., 1386.
 mixed, photographic sensitisation with, B., 525.
 mordant, manufacture of, (P.), B., 264.
 natural, enantiomorphous, A., 863.
 organic, absorption spectra of, A., 563.
 absorption of, on trass, B., 14.
 chromatographic adsorption analysis of aqueous solutions of, B., 586.
 for foods, B., 540.
 photographic, (P.), B., 175.
 photosensitising, (P.), B., 975.
 production of, (P.), B., 843, 942.

Dyes, reversible, catalytic effect of, on cell respiration, A., 121.
 substantive, theory of, B., 988.
 absorption of, by cellulose, B., 989.
 reaction of, with protein fibres, B., 302.
 sulphur, manufacture of, (P.), B., 15, 763.
 manufacture of preparations of, (P.), B., 1135.
 manufacture of solid preparations of, (P.), B., 95.
 black, manufacture of, (P.), B., 986.
 blue, synthesis of, A., 634.
 blue, green, and yellow, chemistry of, A., 504.
 violet, manufacture of, (P.), B., 15.
 yellow to blue, production of, B., 183.
 sulphur and vat, for textiles, manufacture of, (P.), B., 95.
 preparations of, for printing of textiles, (P.), B., 766.
 sulphurised, manufacture of, (P.), B., 763, 843, 1135.
 vat, manufacture of, (P.), B., 15.
 from dihydroxydibenzanthrone, (P.), B., 220.
 from naphthoylethylenediamines, (P.), B., 1135.
 solutions of, B., 298.
 influence of, on oxidation by hypochlorites, B., 301.
 pastes of, (P.), B., 397.
 preparation of, (P.), B., 1037.
 manufacture of water-soluble derivatives of, (P.), B., 941.
 manufacture of esters of leuco-compounds of, (P.), B., 183.
 manufacture of yellow sulphuric esters of leuco-derivatives of, (P.), B., 717.
Dye baths, use of antimony electrodes for pH determination in, B., 542.
 vat, preparation of, (P.), B., 722.
Dye phosphors. See under Phosphors.
Dye works, purification of effluents from, B., 128.
Dyeing, B., 492, 722.
 chemical theory of, B., 353.
 machines for, B., 1139.
 vats for, (P.), B., 990.
 mechanism of, B., 988.
 adsorption and, B., 586.
 and mordanting, A., 301; B., 302, 818, 864, 1008.
 fading of, in fading lamps and sunlight, B., 353.
 resisting of alkaline liquors for, (P.), B., 185.
 nitrogenous condensation products for use in, (P.), B., 348.
 uses of organic solvents in, B., 800.
 use of sodium hexametaphosphate in, B., 224.
 Japanese tannins for, B., 846.
 with anthraquinone dyes, (P.), B., 225.
 with cutch, B., 989.
 with diazoimino-compounds, (P.), B., 264, 349.
 with basic dyes, B., 1090.
 assistants for, (P.), B., 449.
 with direct dyes, (P.), B., 989.
 with ice colours, (P.), B., 267.
 with indigosol dyes, B., 800.
 with salt dyes, B., 1090.
 with ester-salts of leuco-vat dyes, (P.), B., 542.
 with indigosol-O, B., 625.
 of acetate silk, (P.), B., 449, 989.
 of acetylcellulose materials, (P.), B., 59.
 of animal fibres, (P.), B., 946.
 of workmen's blue overall fabric, B., 353.

Dyeing, of cellulose, (P.), B., 353.
 with direct dyes, B., 302.
 of cellulose acetate, B., 98.
 with ice colours, (P.), B., 185.
 of cellulose acetate artificial silk, (P.), B., 670.
 of cellulose ester and ether materials, (P.), B., 449, 946.
 of cellulose fibres, (P.), B., 589, 946.
 and finishing of corset cloth, B., 800.
 of cotton, B., 541.
 on bobbins, (P.), B., 145.
 with substantive dyes, B., 588.
 in bright shades, B., 847.
 of cotton fibres with substantive dyes, B., 988.
 of cotton goods with sulphur blacks, (P.), B., 145.
 of cotton and wool with indigo, B., 19.
 of cuprammonium rayon hosiery, B., 897.
 of fabrics, (P.), B., 542, 1091.
 of feathers for toys, B., 19.
 of staple fibre yarns with vat dyes, B., 58.
 of fibrous materials with ice colours, (P.), B., 98.
 of artificial filaments, threads, ribbons, etc., (P.), B., 626.
 of horse hair and hog bristle, B., 800.
 of waste jute bagging, B., 988.
 of leather, (P.), B., 492, 1140.
 theory of, B., 945.
 sulphite-cellulose extract as mordant in, B., 401.
 of chrome-tanned leather, B., 564.
 influence of p_H on, B., 401.
 of linen with azo-dyes, B., 541.
 of loofahs and sponges, B., 847.
 of paper, B., 143, 847.
 of pelts, furs, etc., (P.), B., 145.
 of water-insoluble plastic masses, (P.), B., 626.
 of rayon fabrics, B., 302.
 of knitted acetate rayon fabric, B., 448.
 of rayon plush and velvet, B., 988, 989.
 of rayon artificial silk by direct dyes, B., 302.
 of viscose rayon with direct dyes, B., 302.
 of sand, (P.), B., 98.
 of silk, with naphthol AS dyes, B., 669.
 of silk textiles with ultra-violet light, B., 669.
 of organic solvents, lacquers, fats, oils, resins, waxes, etc., (P.), B., 847.
 of stockings, B., 449.
 of textile fabrics, (P.), B., 1140.
 of textiles, B., 19, 301, 721; (P.), B., 589, 670.
 with leuco-esters of vat dyes, (P.), B., 224.
 of cellulose derivative textile materials, (P.), B., 670.
 of silk-containing textiles, (P.), B., 401.
 of "Wollstra," B., 721.
 of Wollstra yarn with "benzo fast copper" dyes, B., 1090.
 of wool, B., 626; (P.), B., 766.
 with acid dyes, B., 988.
 of chlorinated wool, B., 352.
 of wool and cotton union linings, B., 988.
 of woollen goods in black, B., 98.
 acid, theory of, B., 353.
 discharge, of wool, (P.), B., 722.
 khaki, B., 800.
 pattern, with ultra-violet light, B., 669.
 reserve, of cotton-wool mixture fabrics, B., 144.
 single-bath, of silk with sulphonyaniline black B., B., 800.

Dyeing, sulphur-black, treatment of waste-water from, B., 542.
 vat, levelling in, (P.), B., 1140.
 in package machines, B., 765.
 of cellulose acetate materials, (P.), B., 98.
 of cotton crêpon fabrics, B., 897.
Dynamite, detonation velocity of, B., 703.
 sensitiveness and brisance of, B., 207.
 gelatin, manufacture of, (P.), B., 383.
Dynamos, copper steel for, B., 855.
 impregnation of graphite brushes for, (P.), B., 1148.
Dynopinacone, constitution of, A., 86.
Dysentery, cathepsin in tissues in, A., 1527.
 toxin, action of sodium thiocyanate against, A., 516.
 amoebic, removal of organism causing, from water, B., 256.
 toxic, cathepsin in tissues in, A., 1527.
Dyspnoea, clinical, in relation to respiration, A., 1149.
Dysprosium, artificial radioactivity of, A., 1050.

E.

Ears, guinea-pig's, surface anaesthesia of outer passages of, A., 1410.
Earth, formation of the, A., 60.
 chemical structure of the, A., 841.
 composition and contraction of the, A., 1099.
 theory of interior of the, A., 1343.
 X-ray structure of minerals of crust of the, A., 724.
 radioactivity of crust of the, A., 1185.
 age of the, from temperature changes and elastic properties, A., 1099.
 from radioactive disintegration, A., 1099.
 from sedimentation, A., 1099.
 determination of combustible gases in air of uppermost strata of the, A., 1341.
Earths, adsorbent, activation of, (P.), B., 754.
 bleaching, action of, on bonzino, B., 582.
 diatomaceous, calcination of, (P.), B., 1043.
 heat treatment of, for use in filters, (P.), B., 1025.
 air-separation of, (P.), B., 1026.
 manufacture of bricks from, (P.), B., 497.
 fuller's, constituents of, A., 1346.
 activation of, B., 132, 451.
 uses of gels of, B., 283.
 Japanese acid, catalytic action of, A., 44, 175, 309, 455.
 dehydration of castor oil with, B., 559.
 rare, A., 425, 606, 714, 1089.
 isotopes of, A., 558.
 in minerals of Germany, A., 324.
 in Madagascar minerals, A., 468.
 hyperfine structure in spectra of, A., 137.
 L-series absorption spectra of, A., 1439.
 X-ray emission spectra of, A., 1471.
 flame and spark-in-flame spectra of, A., 1438.
 radioactivity of, A., 677.
 artificial radioactivity of, A., 1049, 1050.
 specific heat of minerals and salts of, A., 690.
 salts, absorption spectra of, A., 1188.
 double nitrates of magnesium with, A., 577.

Earths, rare, triple nitrites of, A., 1473.
 double sulphates of alkali metals and, A., 180.
 magnetic susceptibility of ethyl sulphates of, A., 924.
 effect of, on polarisation capacity of frog's skin, A., 1534.
 spectrographic detection of, and absorption spectra of their salts, A., 280.
 determination in, of gadolinium and praseodymium, A., 1338.
 separation of, from calcium, by hydrolysis, A., 459.
 from earth acids, A., 838.
Earth-nuts, destruction of insects of, B., 969.
Earthenware bodies, (P.), B., 993.
Earthworms, chemical sense of, A., 1160.
Earwigs, European, control of, by fumigation, B., 327.
Easton tablets, determination in, of quinine and strychnine by method of Danish Pharmacopoeia, B., 924.
Eberthella typhi, properties of viantigen from, A., 1420.
Ebonite, B., 418.
 compounding of, B., 196.
 accelerators of vulcanisation in, B., 34.
 porous diaphragms of, for electric batteries, etc., (P.), B., 777.
 manufacture of glossy articles of, (P.), B., 963.
 production of moulding powder of, (P.), B., 776.
 semi-, B., 685.
Ebullioscopes, differential, A., 465.
Echinonone, A., 1145.
Echinus esculentus. See Sea-urchins.
Eclampsia, hormonal theory of origin of, A., 259.
 blood-ammonia in, A., 385.
 calcium, glucose, and guanidine in blood in, A., 1009.
 reducing substances in blood in, A., 1269.
Eclogites, from the eastern Alps, A., 322.
Ecology in relation to disease, A., 1525.
Ectoparasites of laboratory rats, control of, by sprayed petroleum extracts of pyrethrum, A., 1411.
Ectromelia, infectious, adrenal cortex in, A., 516.
Eczema, p_H of blood-plasma in, A., 886.
 damage to hides and leather by, B., 513.
Edestin, colloidal chemistry of, A., 1203.
 colloidal and constitutive changes of, A., 823.
 crystalline, specific rotation of, A., 369.
Eels, digestion of proteins by enzyme from viscera of, A., 1163.
Effluents, poisoning of animals by cyanides in, B., 1072.
 toxicity of hydrocarbons in, to river fish, B., 1072.
 dyeworks, purification of, B., 128.
 gas works, disposal of, (P.), B., 891.
 industrial, purification of, (P.), B., 1006.
 determination in, of sulphides, B., 176.
 "Efri," constituents of, A., 133.
Eggs, effect of vitamin-D on production of, A., 1287.
 treatment of, (P.), B., 748.
 optimum temperature for freezing of, B., 1162.
 passage of ovoglobulins through the shell of, A., 389.
 vitamin-A in, B., 571.
 from chickens fed with viosterol and cod-liver oil, B., 971.
 effect of feeding with cod-liver oil and irradiated ergosterol on vitamin-D content of, A., 417.

- Eggs, preservation of, (P.), B., 78.**
 calculation of age of, from their weight and volume, B., 875.
 adulteration of, B., 427.
 detection of vegetable lecithin used as substitutes for, in food pastes, B., 1116.
 echinoid, cations antagonising action of hydroxyl ions on, A., 1012.
 of *Esos lucius*, catalase in, A., 519, 1415.
 frog's, metabolism and development of, A., 1271.
 grasshopper's, peroxidase and coll activity in developing, A., 1415.
 tyrosinase in, A., 1417.
 hen's, effect of breed on weight and composition of, B., 378.
 secretory phenomena in oviduct during formation of, A., 1524.
 effect of thyroid on formation of, A., 1285.
 enzymes in, during incubation, A., 389.
 potassium changes during incubation of, A., 524.
 chemistry of, B., 875.
 osmotic pressure, of, A., 771.
 amino-acids in proteins of, A., 652.
 glutathione in, A., 1265.
 effect of food on iodine content of, A., 1529.
 vitamin-A content of, A., 1545.
 effect of diet on vitamins-A and -D in, A., 1428.
 vitamin-E content of, A., 1547.
 effect of feeding with malvaceous seeds on keeping quality of, B., 604.
 decomposition and conservation of, B., 875.
 effect of cold storage on, B., 43.
 detection in, of coal-tar dyes, B., 875.
 incubated, reduced glutathione in, and in tissues of chicks, A., 1398.
 iodised, B., 825.
 liquid, preservation of, (P.), B., 700.
 of marine invertebrates, maturation of, A., 1271.
 salamander's, enzymes in, A., 1535.
 of *Salmo irideus*, catalase in, A., 519.
 sea-urchin's, respiration of centrifuged fragments of, A., 1013.
 permeability to water of ageing unfertilised eggs of, A., 1521.
 nucleic acid of, A., 376.
 action of enzymic oxidation of quinol on, A., 519.
 silkworm's, enzymes of, A., 121.
 oil from, A., 1145.
 hibernating, uric acid in, A., 376.
 spoiled, detection of, B., 427.
 starfish, aerobic reducing intensity of, A., 897.
 unfertilised, hormonal function of, A., 260.
 testing of, B., 825.
 determination of, in pastry, B., 570.
- Egg-albumin.** See under Albumin.
- Egg-plant, pigment of, A., 1290.**
- Egg powder, nutritive value of mixtures of soya-bean powder and, for infants, B., 698.**
- Egg products, decomposition of lecithin in, B., 427.**
 determination in, of lecithinphosphoric acid, B., 43, 250.
- Egg shells, transmission of light through, B., 921.**
- Egg-white, foaming of, B., 921.**
 preservation of, (P.), B., 1067.
 as source of protein and vitamin-B₂ for young rats, A., 545.
 anti-anæmia principle in, A., 885.
- Egg-white, raw and heat-treated, enzymic hydrolysis of, A., 784.**
- Egg-yolk, influence of salts on viscosity of solutions of, A., 647.**
 kephalins of, A., 228.
 lecithins of, and their salts, A., 228.
 production of lecithin and cholesterol from, B., 825.
 lecitho-protein in, B., 1162.
 vitamin-A in, A., 792.
 preservation of, (P.), B., 1067.
 substitutes for, in margarine manufacture, B., 1161.
 birds', protoporphyrin in, A., 510.
- Eicosapentaenoic acid, constitution of, A., 1223.**
- Eicosapentenoic acid, and its decabromide, A., 1105.**
- Eicosatetraenoic acid, constitution of, A., 1223.**
 and its methyl ester and octabromide, A., 1105.
- Eicositetrahydrotetrabenzanthraquinone, A., 1244.**
- Ekacaesium, formation of helium from, A., 322.**
- Elachistea, suction force of, A., 671.**
- Elæostearic acid, stereoisomers of, in seed oils, A., 960.**
- Elaïdic acid, preparation of, pure, A., 960.**
 rancidity and constitution of, B., 363.
 change of, into tissue phospholipins, A., 1530.
 esters, synthesis and hydrogenation of, A., 1350.
 allyl and butyl esters, A., 1350.
- Elaidin reaction, A., 960.**
- Elastic constants of transparent solids, A., 1219.**
- Eleetrargol, differentiation of collargol, argyrol, protargol, and, in solution, B., 828.**
- Electric apparatus. See under Electrical.**
 arc, structure of, A., 1046.
 shields for, (P.), B., 321.
 continuous spectra of, A., 272.
 pressures and temperatures in, A., 1046.
 between various elements, A., 676.
 properties of carbon in, B., 558.
 production of gases with, B., 660.
 in air between metallic electrodes, A., 272.
 mercury, light filters for, A., 466.
 spectrum of rubidium in, A., 1292.
 birefringence, superposition of magnetic birefringence and, A., 149.
 cables. See under Cables.
 charge, value of, and its ratio to mass, A., 804.
 on elements, A., 279, 804.
 condensers. See under Condensers.
 currents, limiting, dependence of, on diffusion constant, rate of dropping, and size of drops of mercury cathodes, A., 305.
 residual, nature of, A., 705.
 discharge, Faraday dark space in, A., 1184.
 apparatus for application of, to compounds, (P.), B., 639.
 reactions in, A., 46, 1987.
 heterogeneous reactions in, A., 177, 700, 943.
 in gases, A., 1184.
 ionic shell effect in, A., 4.
 growth of electron stream and current strength in, A., 425.
 electrophoresis in positive column of, A., 566.
- Electric discharge, in gases, in the cloud chamber, A., 801.**
 arc, effect of reactions on electrodes in, A., 942.
 arc alternating-current, change of temperature in, A., 1046.
 corona, velocity of positive ions in gases in, A., 909.
 electrodeless, in gases, A., 800.
 glow, theory of, A., 1438.
 current distribution between point cathodes and infinite anodes in, in gases, A., 1438.
 electrolysis in, A., 457.
 chemical action in, A., 45, 176.
 mercury, ratio of electronic to ionic current in, A., 1293.
 high-tension, application of, in catalytic hydrogenation, B., 559.
 spark, use of Wilson chamber in study of, A., 557.
 in non-uniform fields, ion distribution in, A., 676.
 spray, current-voltage relation in, A., 1292.
 emission velocity of electrons in, A., 274.
 devices, (P.), B., 1149.
 introduction of metals into, (P.), B., 911.
 containing sodium, (P.), B., 911.
 lamps, (P.), B., 812.
 coiled filaments for, (P.), B., 108.
 luminescent materials for, (P.), B., 958.
 "electrodeless" metal-vapour, for production of resonance radiation, A., 466.
 metal-vapour, (P.), B., 1149.
 glass for, (P.), B., 902.
 quartz-mercury vapour, energy distribution in light from, A., 1298.
 tubes, (P.), B., 30, 316, 812, 1101.
 Braun, fluorescent screens for, (P.), B., 812.
 cathode-ray, (P.), B., 194.
 gas-filled, removal of impurities from, (P.), B., 415.
 permanent-colour, (P.), B., 911.
 emitting ultra-violet light, A., 1475.
 glow, (P.), B., 911.
 of high light intensity, A., 598.
 high-intensity, A., 466, 1341.
 hydrogen, A., 320.
 for absorption spectroscopy, A., 1340.
 low-voltage, (P.), B., 363.
 luminescence, (P.), B., 316.
 luminous, (P.), B., 812.
 metal-vapour, (P.), B., 682.
 neon, (P.), B., 275, 1100.
 electrodes for, (P.), B., 507.
 production of white light from, (P.), B., 558.
 vacuum, high-voltage, A., 59.
 fields, motion of electrons in, A., 1294.
 fuses. See under Fuses.
 heating apparatus. See under Heating apparatus.
 lamps, filaments for, (P.), B., 30, 363, 812, 911.
 glass for stems and flares of, (P.), B., 546.
 etching of matt glass bulbs for, B., 591.
 coating for, (P.), B., 108.
 alternating-current sodium, neutral atoms in vapour of, A., 1438.
 hydrogen-filled, A., 320.
 incandescence, (P.), B., 193.
 filaments for, (P.), B., 158, 773.
 coiled filaments for, (P.), B., 108.

Electric lamps, incandescence, press cap and load-in wire for, (P.), B., 908.
 gas-filled, filling of, (P.), B., 158.
 krypton- and xenon-filled, B., 731.
 mercury, light filters for, A., 320.
 moments of alkyl halides, A., 1056.
 molecular, thermal variation of, A., 568.
 motors. See under Motors.
 rectifiers, (P.), B., 639, 682.
 crystal, A., 682.
 cuprous oxide, A., 188.
 dry, B., 193.
 mercury-vapour, anodes for, (P.), B., 1001.
 solid, physical chemistry of, B., 957.
 tellurium alloy, (P.), B., 911.
 resistances, alloys for, B., 1049.
 chromium-iron alloys for, B., 499.
 m.p. of, B., 63.
 cobalt-gold alloys for, B., 771.
 gold-chromium alloys for, B., 232.
 production of contacts on, (P.), B., 415.
 high, production of, (P.), B., 415.
 lustrous carbon, manufacture of, (P.), B., 29.
 uranium dioxide equalising, B., 639.
 resistors, water-cooled, A., 321.
 semi-conductors, electrical conductivity of, A., 1310.
 photo-emission of, A., 1303.
 effect of electron bombardment on crystal surface of, A., 1309.
 sparks, development of, from a glow, A., 1438.
 condensed, dissociation, excitation, and emission in, A., 1292.
 switches, arc-extinguishing liquid for, (P.), B., 558.
 mercury, gases for use in, (P.), B., 544.
 switch contacts, transference of matter in, B., 461.
 waves, registration of diffraction of, A., 4.
 anomalous dispersion of, in solutions of organic zwitterions, A., 1303.
 frictional dispersion of polar solutions with, A., 1318.
 chemical tracing of, A., 58.
 Electrical apparatus, dielectric and cooling media for, (P.), B., 1100.
 high-voltage, for nuclear physics studies, A., 1296.
 coils, Pupin, magnetic alloys for cores of, (P.), B., 556.
 conductivity, measurements of, in pyrex slits, A., 936.
 micro-cell for, A., 1476.
 purification of solvents for, A., 304.
 and dielectric constants, A., 1476.
 mechanism of, A., 153.
 equation for, A., 584.
 of electrolytes, A., 449.
 near region of anomalous dipolar absorption of solvent, A., 169.
 of thin metal films, A., 20.
 of dilute solutions, A., 936.
 anomalous, A., 825.
 surface, A., 705.
 conductors, resinous materials for containing of, (P.), B., 816.
 insulation of, (P.), B., 910, 1148.
 waterproofing of, (P.), B., 910.
 production of coatings of, on glass, etc., (P.), B., 902.
 arc-quenching, (P.), B., 1001.
 metallic, theory of permanent currents in, A., 566, 1298.
 spherical, of atomic and sub-atomic dimensions, point action with, A., 4.

Electrical contacts, (P.), B., 274, 958.
 tungsten make-and-break, (P.), B., 682.
 equilibrium, thermodynamic foundations of theory of, A., 1298.
 generators, (P.), B., 414.
 indicating and recording apparatus, (P.), B., 462.
 precipitation. See under Precipitation.
 properties of materials at radio frequencies, A., 153.
 resistance, electronic bridge balance indicator for measurement of, A., 1341.
 effect of high pressures on volume and, A., 567.
 of metals, effect of magnetic fields on, A., 435.
 contact, theory of, A., 808.
 Electricity, production of, from fuels, B., 292.
 by fuel cells, (P.), B., 415.
 radio-frequency high-voltage generators for, A., 321.
 transport of, through phase boundaries, A., 705, 1071.
 use of, in biochemistry, A., 1436.
 alternating-current, corrosion by, B., 855.
 Electroaffinity, A., 1306.
 Electrocapillarity, theory of, A., 698.
 determination of, A., 820.
 curves of, A., 826.
 new effect in, A., 698.
 Electrochemical properties of elements, effect of state of aggregation on, A., 1325.
 recording, (P.), B., 67.
 Electrochemistry, relation between fundamental quantities in, A., 706.
 Electrodes, production of, on electric resistances of semi-conducting materials, (P.), B., 415.
 securing rigidity of, A., 723.
 action of light in, A., 46.
 potential of. See under Potential.
 discharge phenomena at, A., 171.
 anodic and cathodic polarisation of, A., 1205.
 detection of reactions at, with Haring cells, A., 457.
 for electrolysis of metallic salts, (P.), B., 811.
 of photo-sensitive organic substances, A., 1463.
 absorption, A., 706.
 alkaline permanganate-manganese dioxide, oxidation potential of, A., 450.
 ammonia gas, A., 1079.
 antimony, A., 45, 826, 1218.
 use of, in acidimetry, A., 1091.
 for measuring p_H , A., 1336, 1476.
 benzaldehyde, A., 38.
 bimetallic, for potentiometric analysis, A., 952.
 caesium and silver, asymmetric conductivity with, A., 682.
 calomel, A., 320.
 carbon, conditions of manufacture and properties of, B., 153.
 for primary cells, (P.), B., 812.
 for spectral analysis, purification of, A., 1340.
 spectrally pure, preparation of, B., 789.
 germanium-germanium dioxide, A., 1341.
 glass, A., 1218.
 potential of, A., 170.
 in contact with electrolyte solutions, A., 449.
 cell for, A., 1097.
 application of lamp potentiometer to, A., 320.

Electrodes, glass, use of, A., 952.
 for p_H measurements, A., 1341.
 in venous blood, A., 104.
 Haber, A., 320.
 gold, potential of, in solutions of other metal salts, A., 449.
 gold, palladium, and platinum, anodic and cathodic polarisation of, A., 1205.
 graphite, treatment of, (P.), B., 1082.
 hydrogen, A., 705.
 for determination of p_H , A., 1218.
 syringe, A., 1097.
 irreversible, potential of, A., 293.
 lead dioxide-lead sulphate, potential of, A., 305.
 mercuric cyanide and oxycyanide, A., 450.
 mercury, polarised, capacity of, A., 305, 1325.
 metallic, potential of, in gelatin, A., 1462.
 in solutions containing foreign ions, A., 706.
 cathodic polarisation of, A., 171.
 mineral, A., 706.
 oxygen, A., 1462.
 photosensitised with dyes, A., 586.
 bright platinum, overvoltage at, A., 707.
 quinhydrone, potential of, in heavy water, A., 1205.
 salt error and potential of, A., 584.
 micro-, A., 189, 1218.
 silver-silver bromide, for dilute solutions, A., 1341.
 silver-silver chloride, molal potential of, in aqueous methyl alcohol, A., 1324.
 silver-silver iodide, potential of, A., 1324.
 determination of dissociation constants of weak bases with, A., 170.
 unpolarisable, to carry action currents, A., 1552.
 zinc, ratio of solution of, in acids, A., 171.
 zinc-zinc sulphate and zinc-copper sulphate, influence of gelatin on, A., 306.
 Electrodeposition, electrochemistry of, B., 857.
 applications of, in printing, B., 105.
 Electrodialysis, cellophane and cuprophane membranes for, A., 467.
 Electro-endosmosis, A., 1317.
 by the bubble tube method, A., 723.
 Electro-filters, feeding of, with low- and high-frequency transformers, B., 957.
 Electrokinetics, A., 450, 933.
 Electrokinetic potential. See under Potential.
 Electrolysis, apparatus for, (P.), B., 858.
 pressure apparatus for, (P.), B., 910.
 multi-cell apparatus for, (P.), B., 958.
 asbestos diaphragms in, B., 558.
 electrodes for, (P.), B., 682.
 furnaces for, (P.), B., 1053.
 in the glow discharge, A., 457.
 effect of supersonic waves on concentration polarisation and overvoltage in, A., 306.
 influence of gas bubbles on resistance of electrolyte in, A., 304.
 applications of, B., 1052.
 of melts, anode effect in, A., 942.
 of dilute solutions, A., 585.
 Electrolytes, theories of, A., 33.
 constitution and properties of, A., 295.
 Wien effect in, A., 1462.
 behaviour of, in mixed solvents, A., 169.
 solutions of, A., 443.
 constitution of water in, A., 295.
 Raman effect in solutions of, A., 428.
 electrical excitation of, A., 699.
 electrical conductivity of, A., 449.

Electrolytes, conductivity of mixed aqueous solutions of, A., 449.
determination of potential-current curves of, A., 306, 585.
limiting effect of Debye equation on polarisation concentration curves of, A., 306.
potential of glass electrode in contact with solutions of, A., 449.
transport numbers of, in aqueous solutions, A., 1078.
activity coefficients in solutions of, A., 34.
dielectric constants of, A., 699.
buoyancy method of measurement of, A., 723.
dielectric constants of aqueous solutions of, at high frequency, A., 13.
dielectric constants of benzene solutions of, A., 13.
apparent molal isochoric heat capacity of, A., 304.
dissociation constants of, A., 34.
dissociation and oxidation-reduction constants and absorption spectra of solutions of, A., 444.
viscosity of aqueous solutions of, A., 817, 1318.
viscosity of solutions of, in water and methyl, ethyl, and *n*-propyl alcohols, A., 295.
theory of diffusion of, A., 443.
diffusion coefficients of, and ionic mobilities, A., 304.
effect of sound waves on, A., 306.
influence of, in ionic reactions, A., 42.
superficial salting-out by, A., 1317.
accumulation of, in plants, A., 551.
in organisms, A., 1623.
amphoteric, dielectric constants of, A., 166, 699.
colloidal, A., 298.
Debye-Hückel theory of, A., 298.
transport numbers in, A., 299.
micellar mass, electrovalency of ions, and osmotic pressure of, A., 298.
cataphoresis of, A., 299.
industrial uses of, B., 296.
mixed, Kohlrausch-Weber theory of moving boundary in, A., 445.
strong, activity of, A., 582.
solid, current-producing processes in, A., 936.
ionic movement in, A., 1302.
strong, theory of, A., 33, 823.
Debye theory of, A., 823.
electrical conductivity of, A., 37.
in dilute solution, A., 1324.
limiting conductivity of, A., 304.
determination of dielectric constants of solutions of, A., 1318.
Faraday effect in aqueous solutions of, A., 1318.
heats of dilution of, A., 36.
effect of water in heats of dilution of, A., 37.
b.p. elevations of aqueous solutions of, A., 443.
thermodynamic properties of aqueous solutions of, A., 446.
compressibility of, A., 1201.
viscosities of aqueous solutions of, A., 295, 443, 1072.
solubility of, in aqueous hydrogen peroxide and aqueous methyl alcohol, A., 1314.
effect of surface on moving processes in dilute solutions of, A., 449.
strong and weak, activity and osmotic coefficients of, A., 702.

Electrolytes, weak, conductivity of dilute solutions of, A., 304.
thermodynamic properties of, A., 302.
effect of ionic environment on dissociation of, A., 823.
Electrolytic apparatus, (P.), B., 30, 108, 773, 774, 813, 910.
double-walled electrodes for, (P.), B., 683.
insulating bush for, (P.), B., 1101.
for gas production, (P.), B., 415.
barrier layers, dielectric loss in, at high field intensities, A., 1447.
baths, electrodes for, (P.), B., 596.
conductivity, measurement of, A., 1340.
apparatus for increasing accuracy of, A., 1097.
mechanism of, A., 705.
of salt solutions, A., 723.
conductors, effect of magnetic fields on, A., 1079.
oxidation, A., 46, 176.
rectifiers, reversible rectification in, B., 363.
solutions. See under Solutions.
Electromagnetic cores, magnetism of, A., 687.
field, new theory of, A., 912.
quantum theory of, A., 8, 279.
due to variable electric charges, A., 556.
Electrometallurgy, furnaces for, (P.), B., 1053.
Electrons, at. wt. and *e/m* ratio for, A., 144.
ratio of mass of, to that of the proton, A., 912.
variation of mass of, in cathode rays, A., 1047.
Born's theory of, A., 4.
Born-Infeld field theory of, A., 278.
quantum theory of, A., 1294.
Born-Schrödinger radius of, A., 1050.
approximation in problems of, A., 278.
sensitivity of light counters for, A., 139.
efficiency of tube counters for, A., 1295.
photographs of tracks of, A., 275.
free paths of, in metals, A., 153.
mean values in mechanics of, A., 557.
production of, by collision of particles, A., 677, 1294.
in pairs, A., 677, 1294.
in chemical action, A., 557, 1293.
emission of, from metallic surfaces, A., 274.
from complex targets, A., 1047.
emission velocity of, in "spray" discharge, A., 274.
influence of screening on creation and stopping of, A., 274.
diffraction of, as means of research, A., 687.
"extra" rings and bands in, A., 287, 1452.
camera for, A., 189, 1476.
as means of structure determination, A., 1061, 1308.
absorption in, A., 687.
in relation to polarisation, A., 4.
by crystals, A., 153, 434.
in gases, A., 153.
by metals and organic polymerides, A., 1452.
by single molecules, A., 18.
on oxide-coated filaments, A., 287.
from vacuum-sublimed layers, A., 1309.
effect of spin interaction in diffraction and polarisation of, A., 5.
one-dimensional diffraction of, A., 434.
apparatus for high-voltage diffraction of, A., 1341.

Electrons, reflexion of, device for measurement of, (P.), B., 596.
electric moment of, A., 425.
analogue of spin of, A., 138.
electrical density and radius of, A., 425.
motion of, in electric and magnetic fields, A., 1294.
polarisation of, A., 801.
by scattering, A., 1294.
by double scattering, A., 274.
in scattering by crystals, A., 557.
diffusion of, A., 4.
energy levels of, in amorphous bodies, A., 282.
drifting through dense gases, energy of excitation by, A., 557.
Born's approximation in collisions of, A., 560.
velocity distributions in elastic collisions of, A., 1294.
capture of, by positive ions from neutral gases, A., 274.
unimolecular capture of, A., 1439.
capture cross-sections for, A., 5.
scattering of, by atoms, A., 1047.
theories of, A., 560.
in helium, A., 1294.
in mercury vapour, A., 1439.
by nitrogen molecules, A., 274.
in potassium, A., 139.
transfer of, from metals to dielectrics, A., 5.
statistics of interaction of, A., 1294.
radiation from mutual annihilation of protons and, A., 1294.
recombination of, with positrons, A., 139.
role of, in chemical combination, A., 150.
from elements activated by neutrons, sign and energy of, A., 803.
of heavy elements, eigenfunctions for, A., 804.
of *K* and *L* levels, probabilities of ionisation of, A., 1293.
conduction, diffuse scattering of X-rays by, A., 1438.
soft X-rays and energy states of, A., 1438.
Dirac, theory of, A., 143.
electromagnetic field and mass of, A., 679.
diamagnetism of, A., 1187.
in a gravitational field, A., 1298.
discrete, occurrence of, A., 560.
fast, de Broglie's law for, A., 275.
effective cross-section with respect to, A., 274.
interference phenomenon on passage of, through crystals, A., 1451.
scattering of, by crystals, A., 1195.
from thin foil, A., 1061.
determination of structure of crystals with, A., 1476.
high-energy, collision of, A., 139.
changes in speed and direction of, A., 801.
high-speed, from fluorine after bombardment by neutrons, A., 7.
metallic, mean free path of, A., 1047.
negative-energy, physical theory of, A., 425.
paired and unpaired, laws of coupling of, A., 957.
positive. See Positrons.
positive and negative, formation of, by charged particles, A., 1439.
slow, diffraction of, A., 1308, 1309.
collision of, with atoms, A., 5.
effect of, on metal surfaces, A., 1332.
blackening of photographic plates by, A., 311.

- Electron-discharge**, filaments for, (P.), B., 67.
 devices, (P.), B., 1101, 1149.
 cathodes for, (P.), B., 236.
 welding of electrodes for, (P.), B., 909.
 active metals for, (P.), B., 1053.
 tubes, (P.), B., 1149.
 manufacture of, (P.), B., 682.
 electrodes for, (P.), B., 958.
 detection of azides in, A., 1472.
- Electron microscope**. See under Microscope.
- Electron-positron pairs**, production of, A., 274, 278.
- Electron rectifiers**, solid, action of, A., 1218.
- Electron waves**, A., 804.
- Electronic charge**, A., 1455.
 modified Sommerfeld formula for, A., 908.
 calculation of, from de Broglie wavelengths, A., 911.
- Electronic conductance** due to non-stoichiometric composition, A., 1303.
- Electronic theory**, A., 1057.
 and valency, A., 1057.
 and organic chemistry, A., 431.
 Born's, absolute field constant in, A., 1050.
- Electronography**, A., 58.
 powder method of, A., 839.
- Electro-osmosis**, A., 30.
 theory of cataphoresis and, A., 162.
 apparatus for, (P.), B., 1100.
 with ceramic diaphragms, A., 1458.
 at porcelain diaphragms, A., 1317.
 concentration and potential changes at membranes in, A., 699.
 ratio of mobility in, to that in electrophoresis, A., 933.
- Electrophoresis**, study of, with cellophane as semi-conductor, A., 1321.
 cell for, A., 933.
 determination of rate of, A., 443, 823.
 mobility in, and apparent critical potentials, A., 1460.
 ratio of mobility in, to that in electro-osmosis, A., 933.
- Electroplating**, B., 28.
 methods of, B., 955.
 apparatus for, (P.), B., 596, 858.
 baths for, (P.), B., 107.
 developments in, B., 65.
 cathodic sludges and spongy deposits in, B., 772.
 analysis of solutions and deposits in, B., 1050.
 of sheet metals, apparatus for, (P.), B., 910.
 interior, anodes for, (P.), B., 414.
- Electrothermal industries**, progress in, B., 507.
- Elektron metal**, analysis of, B., 153.
 determination of, of zinc, B., 272.
- Element**, No. 93, Fermi's, A., 7.
 No. 93 and 94, chemical properties of, A., 559.
 D. I. Mendeleev's "X" and "Y," A., 1440.
- Elements**, incompleteness of the system of, A., 1440.
 genesis of, A., 143.
 nuclear synthesis and isotopic constitution of, A., 275.
 nuclear shell structure of, A., 804.
 polymorphism and atomic structure of, A., 1449.
 intensity of $K\alpha$ satellites for, A., 1184.
 X-ray levels and atomic constants of, A., 139.
 spiral arrangement of atomic numbers of, A., 1048.
- Elements**, electric charge on, A., 804.
 effect of state of aggregation on electrochemical properties of, A., 1325, 1463.
 electroaffinity scale for, A., 15.
 secondary omission from, under bombardment with neutrons, A., 7.
 value of e/m of, A., 8, 279.
 co-ordination numbers of, A., 15.
 equilibrium theory of abundance of, A., 8.
 disintegration of, by swift protons, A., 142.
 artificial disintegration of, A., 1049.
 transformation of, by bombardment by hydrogen, A., 1186.
 transmutation of, A., 1050.
 by neutrons, A., 7.
 argon to manganese, deepest terms in ions of, A., 1437.
 of medium atomic number, disintegration of, by protons, A., 7.
 of medium at. wt., secondary emission from, under action of rays from polonium and beryllium, A., 1442.
 of even and odd mass number, relative abundances of, A., 141.
 heavy, mass defect in, A., 911.
 low states of, A., 8.
 light, atomic disintegration of, by helium and hydrogen, A., 7.
 possible induced β -ray activity of, A., 1049.
 transmutation of, by rapid protons, A., 1297.
 radioactive. See Radioactive elements.
 rare, A., 716.
 radioactivity of, produced by neutrons, A., 559.
 in igneous rocks, A., 841.
 biogenic migration of, A., 1478.
 X-ray spectroscopic analysis of, A., 1338.
 transition, absorption spectra of salts of, A., 427.
- γ -Elemic acid**, oxidation product of, A., 495.
 γ -Elemic acid, and its oxime, A., 495.
- Eleusine coracana**. See Ragi.
- Ellipsin**, A., 375.
- Elodea canadensis**, physiology of leaf cells of, A., 671.
- Elodea densa**, chloroplasts and chlorophyll in, A., 263.
- Elutriation apparatus**, (P.), B., 754.
- Embolism**, cerebral, liberation of histamine-like substances in, A., 1009.
 rôle of marrow in production of hyperglycemia in, A., 1009.
- Embryos**, inducing agent in development of, A., 1012.
- Emeralds**, occurrence and genesis of, A., 1346.
 synthesis of, A., 833.
 optical properties of, A., 725.
- Emeraldine sols**, A., 580.
- Emery paper**, manufacture of, (P.), B., 805, 1095.
- Emery rock** of Samos, A., 1099.
- Emetics**, antimony, constitution of, A., 66.
- Emmenin**, A., 259.
- Emodic acid**, and its triacetate, A., 1238.
- Empoasea solana**, secretion of diastase and invertase by, A., 1163.
- Emulsification** by ultrasonic waves, A., 820.
- Emulsification apparatus**, (P.), B., 435, 706, 883, 929, 978.
- Emulsifying agents**, manufacture of, (P.), B., 14, 92, 139, 539, 585, 619, 664, 1131.
 from unsaturated oils, (P.), B., 737.
 colloidal electrolytes as, B., 296.
 lipins as, A., 445.
- Emulsin**, A., 401, 783, 964, 1110, 1163, 1536.
 coagulation and inactivation of, by heat, A., 1024.
 almond, effect of neutral salts on activity of, A., 1163.
 fission of α -l-arabinosides by, A., 1110.
 action of ozone on, A., 249, 783.
 lucerne, A., 250.
- Emulsions**, A., 445.
 preparation of, by ultrasonic waves, A., 296, 1073.
 production of, B., 433; (P.), B., 295, 619.
 treatment of, (P.), B., 532.
 separation of, A., 701.
 electrical separation of, (P.), B., 316.
 magnetic separation of, (P.), B., 813.
 breaking of, (P.), B., 396, 1076.
 electric dehydrators for, (P.), B., 415.
 rotary apparatus for resolution of, (P.), B., 486.
 stability of, and size distribution, A., 821.
 determination of stability and type of, A., 297.
 stabilisation of, A., 701.
 aqueous, production of, (P.), B., 139, 182, 387.
 asphalt, production of, (P.), B., 294.
 with water, (P.), B., 860.
 for road construction, B., 438.
 bituminous, production of, (P.), B., 214, 662, 758, 891, 1083.
 breaking of, with stones, B., 391.
 stabilisation of, B., 1124; (P.), B., 794.
 rôle of emulsifier in, B., 86.
 for roads, examination of, A., 1340.
 aqueous, production of, (P.), B., 88, 1033, 1083.
 chromatic, A., 579.
- fat**, production of, with water, (P.), B., 860.
 stability of, B., 109.
 use of quinhydrone electrode with, B., 508.
 analysis of, containing sulpho-naphth-
 cnic acids, B., 416.
- mercury**. See Mercury emulsions.
- oil-water**, treatment of, (P.), B., 216.
 breaking of, (P.), B., 486, 893.
 resolution of, (P.), B., 758.
- electrical dehydration** of, (P.), B., 813.
 action of soya lecithin in, A., 31.
- pharmaceutical**. See Pharmaceutical emulsions.
- water-oil**, resolution of, (P.), B., 936.
- Enamels**, (P.), B., 23, 228.
 formula yields in manufacture of, B., 814.
 constituents of, A., 1144.
 use of barium and zinc oxides in, B., 674.
 replacement of borax by sodium phosphato in, B., 591.
 use of nickel dip in application of, B., 901.
 mechanics of adherence of, B., 1093.
 colour-stability in, B., 1093.
 determination of fineness of grinding of, B., 630.
 mechanics of suspension in, B., 630, 901.
 solubility of clouding agents in, B., 630.
 opacifier for, (P.), B., 769.
 polishes for, (P.), B., 407.
 use of finely-milled slips for, B., 405.
 electroanalysis of, B., 901.
 thermal conductivity of, B., 901.
 X-ray study of melts of, B., 453.
 loss of fluorine from melts of, B., 630.
 effect of milling admixtures on m.p. of, B., 591.
 durability of, in service, B., 405.
 testing of, on hollow-ware, B., 545.
 for die-cast aluminium and zinc, B., 32.

- Enamels**, for iron, reboiling of, B., 149.
for cast-iron stoves, B., 630.
of cooking vessels, solubility of, B., 850.
for sheet iron, expansion of, B., 674.
for metals, firing of groundcoats for, B., 405.
for sheet steel, B., 405.
opacity development in, B., 1093.
baking, non-yellowing, containing alkyd resins, (P.), B., 1056.
base, containing cobalt and nickel, adhesion of, B., 850.
borax-free, B., 674.
cellulose, selection of, B., 109.
containing cobalt and nickel oxides, adhesion of, B., 405.
dental. See Dental enamel.
glass, thermal expansion of, B., 1093.
ground-coat, B., 850.
draining qualities of, B., 1093.
for sheet iron, strength and Young's modulus of, B., 453.
reboiling of, B., 149.
blue, viscosity and reboiling of, B., 149.
white, B., 149.
for steel, adherence of, B., 1093.
grounding, borax-free, B., 674.
oil, pigments for, B., 417.
use of pigments or "adulterated pigments" in, B., 1055.
old and new, B., 239.
porcelain, furnace atmosphere and temperature gradients in application of, B., 1093.
vitreous, production of, (P.), B., 23, 271.
effect of grinding on fineness distribution of, B., 1093.
staining power of pigments in, B., 774.
manufacture of frit for, (P.), B., 307.
gas trapped in, on enamelling iron, B., 544.
use of titanium compounds in, B., 545.
determination in, of fluorine, B., 850.
Enamel ware, manufacture of, (P.), B., 902.
resistance of, to boiling and acids, B., 22.
Enamelling, determination of stoving temperature in plants for, B., 33.
Enargite, occurrence of, in N. Arkansas, A., 469.
Encephalitis, Weinicke, A., 1156.
Endives, destruction of root-fly on, B., 472.
Endocrocin, and its triacetate, dibromide, and trimethyl ether and its methyl ester, A., 1238.
Endometrium, hyperplasia of, following administration of pregnancy urine, A., 1425.
Endosomase, formation of, in cell division, A., 660.
3:6-Endoxo-3- γ -phenylpropylhexahydrophthalic acid, and its anhydride, A., 1128.
3:6-Endoxo-3- γ -phenylpropyl-4'-tetrahydrophthalic anhydride, A., 1128.
Energy, equivalence of mass and, A., 143.
discontinuities in, A., 156.
losses of, according to types of irreversibility, A., 815.
transformations of, at surfaces, A., 311.
and angular momentum in optics, A., 804.
chemical, application of statistical method in, A., 1463.
free, calculation of, from spectroscopic data, A., 301.
Energy coefficients, system of, A., 1305.
Engines, powdered-coal fuels for, B., 534.
starting temperatures of, using alcohol-ether fuels, B., 342.
influence of dissolved gum on performance of, B., 1031.
Engines, aircraft, metals for, B., 272.
automobile, lubrication of, with colloidal graphite, B., 791.
combustion, spectra of flame gases in, A., 451.
Diesel, detonation in, B., 342.
knock in, B., 980.
explosion, use of gas oils in, B., 827.
gasoline and Diesel, B., 438.
high-pressure fuel injection, fuels for, (P.), B., 984.
internal-combustion, aluminium alloys for bearings of, (P.), B., 557.
antiknock compounds for, (P.), B., 261.
removal of carbon deposits from, (P.), B., 90.
oil for flushing of crankcases of, (P.), B., 1128.
wear of cylinders of, B., 438.
filtration of fuels for, (P.), B., 4.
liquid fuels for, (P.), B., 216, 713.
solid fuels for, B., 534.
exhaust gases from, B., 437.
purification of, (P.), B., 537, 1122.
use of mixtures of gasoline with ethyl and isopropyl alcohols in, B., 86.
treatment of heavy hydrocarbon oils in, (P.), B., 760.
hydrogen generator for, (P.), B., 441.
lubrication of, with olive oil, B., 582.
detonation and pseudodetonation in, B., 133.
deposits and corrosion in cooling systems of, B., 212.
prevention of corrosion in cooling systems of, (P.), B., 1098.
combustion in, B., 133.
formation of formaldehyde by preflame reactions in, B., 581.
effect of lead tetraethyl on preflame reactions in, B., 888.
coal-dust-fired, fuel for, B., 706.
steam, theory of, B., 433.
Engineering, brittleness of ductile metals used in, B., 554.
chemical, in stratosphere, B., 577.
application of cast iron in, B., 358.
Engraving, etching methods in, B., 575.
mushroom dot in half-tone etching in, B., 575.
Enol-betaines, A., 987.
Enolase, separation of, from phosphoglyceromutase, A., 1418.
Enolates, formation of, and their condensation with aromatic aldehydes, A., 344.
reactions of, A., 474.
Entameba histolytica, effect of chlorinated lime on cysts of, B., 976.
Entandrophragma palustris, constituents of, A., 267.
Enterokinase, activation of trypsinogen by, A., 660.
assay of, A., 1417.
Entropy, calculation of, from X-ray data, A., 1198.
from spectroscopic data, A., 301.
Peltier and Thomson effects and, A., 20.
and absolute rate of reactions, A., 306, 1205.
changes of, in slow reactions, A., 1463.
of gases, calculation of, A., 157.
and parachor of metals, A., 934.
of organic compounds, A., 1339.
rotational, of polyatomic molecules, A., 1064.
Enzymes, A., 400.
production of, (P.), B., 780.
nature of, A., 532.
chemistry of, A., 1161.
effect of supersonic rays on, A., 400.
Enzymes, cryolysis, diffusion, and particle size of, A., 1276.
mechanism of action of, A., 400.
equations for kinetics of, A., 1414.
activity of, adsorbed on filter-paper, A., 659.
effect of various sodium salts on, A., 405.
detection of, A., 123.
inhibition of proteolytic activity of, by oxidising agents, B., 1115.
inactivation of, by diazomethane, A., 897.
specificity of catalysis by, A., 940.
effect of irradiation on dehydrogenation by, A., 121.
esterification by, A., 403.
viscosity effects in reactions of, B., 424.
reaction of substrates of, with molecular oxygen, A., 1277.
water relations of, A., 533, 1163.
application of, in industry, B., 40.
role of, in malting and brewing, B., 76.
as protein complexes, A., 122.
determination of concentration of, A., 1535.
concentration of preparations of, A., 782.
histochemistry of, A., 248, 784, 906, 1025, 1161, 1163.
in plants. See under Plants.
use of, in biochemical detection of carbohydrates, alcohols, glucosides, etc., A., 1416.
production of, in jejunum, A., 400.
efficiency of, in avitaminosis, A., 415.
fixation of, by cells, A., 251.
activity of, in living cells, A., 400.
vitamins, and maximum colloidal, A., 121.
effect of varying diets on, in the organism, A., 1536.
amino-acid-oxidising, purification of, A., 783.
amylolytic, A., 1415.
cellulose- and hemicellulose-splitting, (P.), B., 696.
defence, production of, by injection of leucylalbumins, A., 1279.
digestive, in cattle, A., 533.
endo-, of tissues and glands, A., 401.
fermentation, A., 661, 784, 1026.
filtration, pectolytic activity of, A., 1415.
of intracellular tissue, hydrolysis by, A., 1162.
lipolytic, distribution of, in adrenals, A., 1263.
oxidation-reduction, A., 121.
pancreatic, resorption of, after ligation of ducts, A., 533.
action of thyroxine on, A., 540.
proteolytic, A., 1416.
monolayers of, A., 785.
action of dyes and narcotics on, A., 784.
action of, on flour, B., 330.
purified, spectroscopy of, A., 1535.
respiratory, mixtures of, with substances, A., 248.
Schardinger's, A., 783.
and co-enzymes involved in oxidation-reduction and phosphorylation, A., 1414.
identity of, with xanthine-oxidase, A., 1162.
specific defence, in the organism, A., 660.
synthetic, synthesis of, A., 1023.
tissue, A., 1023.
yellow, active group of, A., 248, 400.
oxidation, A., 1024.
Enzyme action, A., 403.
theories of, A., 401.
mechanism of, A., 1023.

- Enzyme action, quantum mechanics of, A., 533.**
 spectroscopy of, A., 1189.
 effect of ultra-violet light on, A., 1415.
 kinetics of, A., 1084.
 equilibrium of, A., 401.
 thermal analysis of velocity of, A., 1278.
 as heterogeneous catalysis, A., 248.
 activation of, A., 1165.
 relation of, to biological effects of radiation, A., 783.
- Eötvös constant, A., 1038, 1059.**
- Eosin, effect of potassium cyanide on hæmolytic action of, A., 643.**
 effect of sodium chloride on hæmolytic action and fixation by, A., 644.
 effect of injection of, on neutral sulphur of blood, A., 642.
- Ephedrine, A., 209.**
 pharmacology of, A., 893.
 crystalline alkaloid from, A., 764.
 quaternary halides, physiological action of, A., 893.
 sulphate, effect of oral administration of, A., 397.
 derivatives, synthesis of, A., 1493.
 homologues, and their salts, production of, (P.), B., 782.
 effect of, on respiratory exchange, A., 654.
 synthetic, A., 81.
- (-)-Ephedrine, resolution of mandelic acid with, A., 1494.**
- Ephedrine, hydroxy-, action of, on oxygen consumption in white mice, A., 397.**
- Epichlorohydrin, condensation of, with *p*-phenetidine hydrochloride, A., 614.**
 reaction of, with secondary amines, A., 202.
 on α -picoline and aniline, A., 1118.
- Epidiorite from Loch Fyne, A., 725.**
- Epidote, determination in, of water, A., 1344.**
- Epilepsy, acid-base equilibrium in, A., 108.**
 chemistry of blood in, A., 1149.
 ratio of acids and ammonia in urine in, A., 108.
 ammonia in urine in, A., 108.
- Epoxidiethoxybenzenes, A., 1504.**
- Equation, electromagnetic, A., 1050.**
 Schrödinger's, solutions of, A., 1187.
 wave, general form of, A., 560.
- Equation of state, A., 157.**
 theory of, A., 1313.
 Boyle's law in, A., 691.
 thermodynamic theory of, A., 437.
 new, ϕ_0 -value in, A., 925.
 for ideal gases, A., 691.
 for monatomic ideal gases, A., 157.
 for real gases, A., 22, 156, 691.
 properties of real gases according to, A., 437, 925.
 for liquids, A., 1064.
 of dissolved substances, A., 1076.
 for surface layers, A., 157.
 thermodynamic, A., 925.
- Equilenin, structure of, A., 752.**
 and its picrate, A., 1426.
 derivatives, A., 753.
- Equilibrium, influence of thermal diffusion in measurement of, A., 301.**
 in mixed liquids and solutions, A., 575.
 of third kind, A., 155.
 of unstable compounds, A., 446.
 acid-base, and Henderson formula, A., 1326.
 chemical, and Le Chatelier principle, A., 301.
 homogeneous, effect of pressure on, A., 823.
- Equilibrium, chemical and physical, high-velocity approach to, A., 1316.**
 homogeneous, elementary displacements in, A., 301, 446.
 inner, effect of intensive drying on, A., 437.
 in solids, A., 811.
 liquid-vapour, apparatus for study of, A., 1341.
 solid-liquid, in ternary organic systems, A., 825.
 thermal, in ternary systems, A., 1078.
 thermodynamic, A., 446.
- Equilin, structure of, A., 752, 862.**
 dehydrogenation of, A., 1426.
 derivatives, A., 753.
 biological properties of, A., 542.
- Equivalence law, Einstein's, test of, A., 1097.**
- Equivalents, A., 840.**
- Equol, constitution of, A., 1032.**
- Eranthis-J, A., 1019.**
- Erepsin, action of, on polypeptides containing ψ -leucine, A., 1228.**
- Ergamine flavianate, A., 639.**
- Ergobasine, A., 995, 1274.**
- Ergoclavine, action of, A., 1157.**
 hydrolysis of, A., 872.
- Ergometrine, A., 655.**
 preparation of, A., 894.
 and its salts, A., 1512.
 spectrographic absorption of, A., 1512.
 pharmacology of, A., 1157, 1531.
- Ergometrinine, and its salts, A., 1256.**
- Ergostadienol, and its acetate, A., 487.**
- neoErgostatetraene, A., 742.**
- neoErgosta-3:22-triol, A., 742.**
- Ergostenediol II, and its acetate, A., 487.**
- Ergosterol, A., 487.**
 position of hydroxyl groups in, A., 210.
 photochemistry of, A., 81.
 irradiation of, A., 857; (P.), B., 973.
 irradiation products of, A., 1235.
 electrophoresis of, A., 823.
 ketonisation of, A., 617.
 derivatives, crystal structure of, A., 434.
 effect of storage on deterioration of, A., 487.
 irradiated, and its photographic activity, A., 857.
 biochemical standardisation of, A., 1176.
 antirachitic potency of, and of cod-liver oil, A., 1546.
 effect of, on blood-phosphorus, A., 539.
 production of hypercalcaemia by, A., 129.
 effect of hypercalcaemia from, on cerebral cortex, A., 539.
 effect of, on prolific capacity of animals, A., 547.
 action of, on chickens, A., 547.
 See also Vitamin-D₂.
 detection of, A., 228.
 neoErgosterol, hydrocarbons from, A., 742.
 Ergosteryl acetate-maleic anhydride, transformation products of, A., 857.
- Ergostetrine, A., 1512.**
- Ergot, active constituents of, A., 894, 1157.**
 alkaloid content and activity of saprophytic cultures of, A., 1040.
 nucleic acid of, A., 797.
 production of stable aqueous-alcoholic extracts of, (P.), B., 654.
 stabilisation of fluid extract of, B., 173.
 stability of preparations of, B., 877.
 effect of preparations of, on human uteri, A., 872.
 oxytoxic effect of, A., 655.
- Ergot, corn, toxicity of aqueous extracts of, and of ergot, A., 1532.**
 rye, alkaloid from, A., 1274.
 Seigle, water-soluble alkaloid from, A., 995.
 testing of, B., 174.
 evaluation of, nephelometrically, B., 332.
 toxicological detection of, A., 527.
- Ergot alkaloids, A., 504, 764, 1137, 1256, 1512.**
- Ergotamine, crystal structure of, A., 1451.**
- Ergotinine, cleavage of, by sodium and butyl alcohol, and its derivatives, A., 504.**
 hydrolysis of, A., 872, 1137.
- Ergotoeine, and its onium salts, A., 995.**
 and its picrate, A., 872.
 optical rotation of, A., 1512.
- Ergotoxine, effect of, on excretion of sodium chloride and water in urine, A., 894.**
- Eriobotrya japonica. See Medlars, Japanese.**
- Erlenmeyer synthesis, reduction of benzamidoacrylic acids in, A., 489.**
- Erucic acid, arginine salt, A., 966.**
 lysine ester, A., 966.
- Erucodibromobenzoic acid, configuration of, A., 195.**
- Erwinia tracheiphilia, physiological effects of, on Cucurbitaceae, A., 1181.**
- Erythraea centaurium, constituents of, A., 1550.**
- i-Erythritol from metabolism of fungi, A., 1028.**
- Erythrodextrin, crystalline, A., 133.**
- d-Erythro-2-ketopentose. See d-Adonose.**
- Erythronamides, A., 72.**
- Erythronophenylhydrazide, A., 608.**
- l-Erythrose, formation of, from l-arabinal, A., 1354.**
- Escherichia-Aërobacter intermediates, A., 1169.**
 detection of, in milk, A., 1420.
- Escherichia coli, activity of, A., 1169.**
 eosin-methylene-blue agar for count of, A., 1283.
 oxidation-reduction potential and ferri-cyanide-reducing activity of, A., 536.
 dissimilation of glucose and xylose by, A., 255.
- Escherichia communior, activity of, A., 1169.**
- dl-Eserethole, and its picrate, A., 636.**
 synthesis of, A., 635, 1256, 1378.
- d- and l-Eserethole methiodides, synthesis of, A., 499.**
- Eseretholes, synthesis of methiodides of, A., 227.**
- Eserine (physostigmine), A., 227.**
 synthesis of, A., 765, 996.
 syntheses with, A., 499, 1256, 1378.
 synthesis of compounds resembling, A., 635.
 effect of, on alkali reserve and blood-sugar, A., 641.
 with acetylcholine on gastro-intestinal mobility, A., 1421.
 inhibition of choline-esterase by, A., 1274.
 determination of, mercurimetrically, A., 999.
- l-Eseroline methopicate, A., 996.**
- Esos lucius, eggs of. See under Eggs.**
- catalase in embryos of, A., 1535.**
- Esparto grass, constituents of wax from, A., 551.**
- Essexite, anemousite in, A., 1220.**
- Esters, production of, (P.), B., 13, 138, 139, 262, 893, 938.**
 from petroleum, B., 536.
 from polyhydric alcohols, (P.), B., 92.

- Esters, purification of, (P.), B., 396.
 denaturants for, (P.), B., 13.
 adsorption of vapours of, by active charcoal, A., 929.
 hydrolysis of, in light and heavy water, A., 829.
 in pure water, A., 938.
 condensation of, A., 846.
 mechanism of, A., 472.
 aliphatic, manufacture of alkylene chlorohydrins and, (P.), B., 1130.
 purification of, (P.), B., 939.
 dibasic, surface potentials of, A., 161.
 carboxylic, hydrolysis of, A., 1465.
 cyclic ketonic, syntheses with, A., 859.
 long-chain, manufacture of, (P.), B., 92.
 macrocyclic, A., 844.
 of organic acids, reaction of, with magnesium isopropyl chloride, A., 845.
 unsaturated, manufacture of, (P.), B., 796.
 determination of, in alcoholic liquids, B., 474.
 Ester gum, colour of, B., 319.
 Esterase, composition and properties of, A., 261.
 models of, A., 659, 784, 1163.
 acid-base catalysis with, A., 403.
 fixation of, by liver, and its isolation, A., 251.
 in duodenal and gastric mucosa of pigs, A., 1025.
 effect of avitaminosis-B on action of, A., 419.
 cholesterol, in blood, A., 1536.
 liver, purification and specificity of, A., 534.
 specificity and inhibition characteristics of, A., 403.
 Esterification, kinetics of, A., 43.
 by reaction of soaps and chlorinated hydrocarbons, B., 893.
 enzymic, A., 403.
 Estragol, reactivity and Raman spectrum of, A., 1446.
 Ethane, electron configuration of, A., 1188.
 vibration frequency of, A., 1053.
 ultra-violet absorption spectrum of, A., 562.
 electric moment of, A., 567.
 compressibility and equation of state for, A., 438.
 adsorption of, by active carbon, A., 696.
 equilibrium of, with ethylene and hydrogen, A., 934.
 pyrolysis of mixtures of, with ethylene and hydrogen, A., 40.
 oxidation of, A., 40, 324.
 influence of metal surfaces on, A., 830.
 slow oxidation of, A., 172.
 degree of dissociation of hexa-aryl derivatives of, A., 1453.
 Ethane, $\alpha\beta$ -diamino-. See Ethylenediamine.
 bromo-, reaction of sodium hydroxide with derivatives of, in ethyl alcohol, A., 1465.
 dibromo-derivatives, reaction of, with acids and bases, A., 62.
penta- and *hexa*-bromo- and -chloro-, kinetics of reactions of, with sodium hydroxide, A., 173.
 chloro-derivatives, Kerr effect of, A., 810.
 dichloro-, dipole moment and Raman effect of, A., 12.
 preparation of ethylene glycol from, A., 193.
aaa- and *aa\beta*-trichloro-, Raman spectra of, A., 1301.
 tetrachloro-, dipole moment of, A., 916.
 determination of moisture in cereal products with, B., 1114.
 Ethane, hexachloro-, drying of, (P.), B., 531.
 vapour pressure of, A., 1064.
 manufacture of fluoro-halogeno-derivatives of, (P.), B., 715.
 halogeno-derivatives, absorption of light by vapours of, A., 563.
 dihalogeno-derivatives, vibration of, A., 1053.
 diiodo-, action of light on, A., 48.
s-diiodo-, crystal structure of, A., 1195.
 $\alpha\beta$ -Ethanediansinic acid, barium salt, A., 333.
 $\alpha\beta$ -Ethanedimalonic acid, esters, cyclisation of, by sodium ethoxide, A., 961.
 Ethane- $\alpha\alpha$ -disulphonic acid, phenyl ester, derivatives of, A., 472.
 Ethaneseleninic acid, molecular compounds of, A., 960.
 Ethane- $\alpha\alpha$ -sulphonamic acid, barium salts and phenyl ester, A., 472.
 α -Ethanesulphonamidopropionic acids, ethyl esters and derivatives of, A., 850.
 (-)Ethanesulphon-(+)amidopropionic acids, ethyl esters, A., 850.
 Ethane- α -sulphonic acid, α -amino-, and its acetyl derivative, sodium salt, A., 72.
 Ethanesulphonyl chloride, A., 850.
 (-)Ethanesulphonyl-(+)alanines, A., 850.
 (-)Ethanesulphonyl-(+)lactic acid, and its ethyl and phenyl esters and derivatives, A., 850.
 Ethanolamine, sulphated condensation products of fatty acids and, (P.), B., 939.
 Ethenes, amino-, preparation of, A., 1378.
 Ether. See Ethyl ether.
 Ether, electromagnetic, atomic field of force of, A., 279.
 Ethers, preparation of, in liquid ammonia, A., 605.
 manufacture of, (P.), B., 664.
 from alkyl sulphate esters, (P.), B., 619.
 far-ultra-violet absorption spectra of, A., 805.
 fission of, by sodamide, A., 1119.
 hydrogenation and hydrogenolysis of, A., 483.
 compounds resembling, A., 473, 730, 846.
 saturation of affinity of oxygen in molecular compounds of, A., 429.
 colours produced in mixtures of cupric chloride and halogen hydrides by, A., 167.
 cyclic and open-chain, manufacture of, (P.), B., 1037.
 halogenated, manufacture of, (P.), B., 297.
 organic, manufacture of, (P.), B., 619.
 phenolic, isomerisation of, at high temperatures, A., 485.
 tertiary, manufacture of, for use as solvents, (P.), B., 715.
 α -unsaturated, preparation of, from $\beta\beta$ -dimethoxyalkanes, A., 606.
 Ether-lactones, with five-membered rings, A., 730.
 Ethoxides, conductivity of, A., 705.
 4-Ethoxyacetophenone, 2-hydroxy-4- β -hydroxy-, and its derivatives, A., 1247.
 5-Ethoxy-7-acetyl-1:3:9-trimethyldihydro-uric acid, 4-hydroxy-, A., 361.
m-Ethoxyanisole, *m*- β -hydroxy-, and its derivatives, A., 1247.
 4-Ethoxy-9-anthrone, 1-hydroxy-, A., 217.
 3-Ethoxybenzaldehyde, 2-chloro-4:6-dibromo-, and 2:6-dichloro-4-bromo-, and their derivatives, A., 998.
p-hydroxy-, detection of adulteration of, B., 12.
 Ethoxybenzenes, dihydroxy-, and their acetyl derivatives, A., 1504.
 3-Ethoxybenzoic acid, 2-chloro-4:6-dibromo-, and 2:6-dichloro-4-bromo-, and their derivatives, A., 998.
 γ -4-Ethoxybenzoylbutyric acid, γ -3-amino-, and -nitro-, A., 1236.
 β -Ethoxy- α -benzoyl- β -phenylethane, α -chloro-, A., 1368.
 β -4-Ethoxybenzoylpropionic acid, β -3-amino-, and -nitro-, A., 1236.
 3:4-Ethoxybenzoylvaleric acid, δ -3-amino-, and -nitro-, A., 1236.
 5-Ethoxybenzothiazole, 1-amino-, (P.), B., 1134.
N-5-Ethoxybenzthiazolyl-1-*N*¹-allylcarbamide, A., 226.
p-Ethoxybenzylamine, and its salts, A., 742.
m- and *p*-Ethoxybenzylamines, A., 614.
m-Ethoxybenzylcarbamide, A., 615.
 Ethoxybenzylcarbamides, A., 614.
 5-Ethoxy-3- β -bromoethylindole, A., 1379.
 β -Ethoxy- Δ^{γ} -butadiene, A., 1221.
 3-Ethoxy- Δ^{δ} -buten- β -ol, A., 1221.
 3-Ethoxy- Δ^{δ} -butylene, β -chloro-, A., 1221.
 β -Ethoxybutyric acid, γ -chloro-, ethyl ester, A., 1105.
 β -Ethoxy- γ -butyrolactone, A., 1105.
 2-Ethoxy-3-carbethoxydiphenyl, production of, (P.), B., 878.
 4-Ethoxy-3-carbethoxydiphenyl, production of, (P.), B., 878.
 2-Ethoxy-3-carbo- β -bromoethoxydiphenyl, production of, (P.), B., 878.
 4-Ethoxy-3-carbo- β -bromoethoxydiphenyl, production of, (P.), B., 878.
 4-Ethoxy-3-carbo- β -bromoethoxydiphenyl, 4'-nitro-, production of, (P.), B., 878.
 4-Ethoxy-3-carbo- γ -bromopropoxydiphenyl, production of, (P.), B., 878.
 4-Ethoxy-3-carbo- γ -di-*n*-butylaminopropoxydiphenyl, manufacture of, (P.), B., 878.
 2-Ethoxy-3-carbo- β -diethylaminoethoxydiphenyl, production of, (P.), B., 878.
 4-Ethoxy-3-carbo- β -diethylaminoethoxydiphenyl, production of, (P.), B., 878.
 4-Ethoxy-3-carbo- β -diethylaminoethoxydiphenyl, 4'-amino-, and 4'-nitro-, manufacture of, (P.), B., 878.
 2-Ethoxy-3-carboxydiphenyl, production of, (P.), B., 878.
 4-Ethoxy-3-carboxydiphenyl, production of, (P.), B., 878.
 4-Ethoxy-3-carboxydiphenyl, 4'-nitro-, production of, (P.), B., 878.
 4-Ethoxychalcone, 5-bromo-2-hydroxy-4- β -hydroxy-, dibromide, 4- β -hydroxy-, acetyl derivative, 2:2'-dihydroxy-4- β -hydroxy-, and 2'-nitro-2-hydroxy-4- β -hydroxy-, and its acetyl derivative, A., 1247.
 8-Ethoxychloromethylbenzodioxans, A., 1504.
 4-Ethoxy-1:9-diacetoxanthracene, A., 217.
 4-Ethoxy-3:6-diacetyl-1:8-dimethylacetylenediureine, A., 223.
 5-Ethoxy-3:7-diacetyl-1-methylhydantamide, A., 96.
 1-Ethoxydibenzofuran, 1- β -chloro-, A., 986.
 8-Ethoxydiethylaminomethylbenzodioxans, and their hydrochlorides, A., 1504.
 5-Ethoxy-1:3-dimethylbarbituric acid, 5-amino-, acetyl derivative, A., 96.
 5-Ethoxy-1:3-dimethyl-3- β -methylaminoethylidihydroindole, and its picrates, A., 636.
 5-Ethoxy-1:3-dimethyloxindolyl-3-acetonitrile, A., 636.
d-5-Ethoxy-1:3-dimethyloxindolylethylmethylamine, salts, A., 765.

- 5-Ethoxy-*NN*-dimethyltryptamine, and its dipicrate, A., 1379.
- 5-Ethoxy-1:3-dimethyl-4⁹-isouric acid, A., 96.
- Ethoxydiphenyl hydrochloride, 4-hydroxy-3- β -bromo-, manufacture of, (P.), B., 878.
- 5-Ethoxy-1:3-diphenyl-5-*p*-bromophenyl-2-pyrrolone, A., 498.
- 2-Ethoxydiphenyl-3-carboxylic acid, and its 4-amino-derivatives, production of, (P.), B., 701.
- 2'-Ethoxydiphenyl-6-carboxylic acids, 2-nitro-, A., 1364.
- 4-Ethoxydiphenyl-3-carboxylic acid, and its 4'-nitro-derivatives, production of, (P.), B., 701.
- Ethoxydiphenylmethyl peroxide, A., 345.
- β -Ethoxyethyl *p*-aminobenzoate, and its picramide, A., 1494.
- other, manufacture of, (P.), B., 715.
- p*-toluenesulphonate, A., 636.
- α -(β -Ethoxyethyl)acetoacetic acid, and α -chloro-, ethyl esters, A., 1511.
- 4-Ethoxyethylbenzene, 2-hydroxy-4- β -hydroxy-, and its derivatives, A., 1247.
- 3- α -Ethoxyethylidibenzofuran, 3- β -chloro-, A., 986.
- β -Ethoxyethylhydrocupreine, and its dihydrochloride, A., 636.
- 9-Ethoxy-9-*p*-ethylphenylfluorene, A., 1358.
- β -Ethoxyethyltrimethylammonium iodide, A., 853.
- 7-Ethoxyflavanone, 7- β -hydroxy-, A., 1247.
- 7-Ethoxyflavone, 7- β -bromo-, 6-bromo-7- β -hydroxy-, and 7- β -hydroxy-, and its acetyl derivative, A., 1247.
- 4'-Ethoxyflavium chloride, 2'-hydroxy-4'- β -hydroxy-, acetyl derivative, and its derivatives, A., 1247.
- 5-Ethoxy-3- β -hydroxyethylindole, A., 1379.
- 8-Ethoxyhydroxymethylbenzodioxans, A., 1504.
- 5-Ethoxyindole, A., 499.
- 5-Ethoxyindoleacetonitrile, A., 499.
- 5-Ethoxyindole-2-carboxylic acid, ethyl ester, A., 499.
- 5-Ethoxy-3-indolylacetic acid, and its ethyl ester, A., 1379.
- β -(5-Ethoxy-3-indolyl)ethyl alcohol, A., 1256.
- 7-Ethoxy-3-keto-4-methylindoneacetic acid, and its ethyl ester, and their semicarbazones, A., 1366.
- 3-Ethoxy-2-mesityl-1:4-naphthaquinone, A., 1126.
- 5-Ethoxy-3- β -methylaminoethylindole, and its derivatives, A., 1378.
- o*-Ethoxymethylbenzylcarbamide, A., 615.
- 2-Ethoxy-2-methylchroman, A., 985.
- 4-Ethoxy-6:7-methylenedioxy-2-thion-3-phenyl-1:2:3:4-tetrahydroquinazoline, A., 630.
- 10-Ethoxymethylphosphoribides, A., 362.
- 4-Ethoxy-2-methylquinoline, and its derivatives, A., 1506.
- 6-Ethoxy-2-methylquinoline, 4-chloro-, derivatives of, A., 989.
- 6-Ethoxy-2-methylquinoline-4-carboxylic acid, A., 339.
- 6-Ethoxy-2-methyl-4-quinolylazide, and its picrate, A., 989.
- 6-Ethoxy-2-methyl-4-quinolylhydrazine, and its salts, A., 989.
- 6-Ethoxy-2-*m*-nitrostyrylquinoline derivatives, B., 298.
- 10-Ethoxyphaeoporphyrin *b*₆ oxime, A., 763.
- 10-Ethoxyphaeoporphyrins, esters, A., 362.
- 4-Ethoxyphenol- β -*D*-glucoside, and its tetraacetyl derivative, A., 964.
- 4-Ethoxyphenylarsenoxide, β -hydroxy-, and its derivatives, A., 100.
- 4-Ethoxyphenylarsinic acid, 3-nitro- β -hydroxy-. See β -4-Arsinophenoxyethyl alcohol, 2-nitro-.
- p*-Ethoxyphenylcarbamic acid, cholesteryl ester, A., 209.
- 4-Ethoxyphenyl β -dichloroarsine, 3-amino- β -hydroxy-, hydrochloride, A., 100.
- β -*p*-Ethoxyphenylethylpyridinium bromide, β -hydroxy-, A., 1131.
- 2-*p*-Ethoxyphenylindazole 1-oxide, 4:6-di-nitro-3-hydroxy-, and its derivatives, A., 502.
- 5-Ethoxyphenylpyruvic acid, 2-nitro-, A., 499.
- 4-Ethoxy-1-phenyl-1:4:5:6-tetrahydropyridazin-6-one, and 5-bromo-, A., 991.
- Ethoxy-3:4-phthalide, chloro-, A., 1123.
- 10-Ethoxyphyloerythrin, and its copper salt and oxime, A., 1383.
- 2-Ethoxycyclopropanecarboxylic acid, ethyl and methyl esters, A., 1105.
- 2-Ethoxypyridine, 5-amino-, butyryl and propionyl derivatives, manufacture of, (P.), B., 430.
- m*-Ethoxythiobenzamide, A., 614.
- 5-Ethoxytoluene, 2-nitro-, A., 499.
- 5-Ethoxy-3-(β -toluenesulphonamidoethyl)-indole, A., 1378.
- 5-Ethoxy-3-(β -toluenesulphonmethylamidoethyl)indole, A., 1378.
- 9-Ethoxy-9-*p*-tolylfluorene, A., 1358.
- β -6-Ethoxy-*m*-tolylglutaconic acid, and its derivatives, A., 1366.
- 5-Ethoxy-1:3:5-triphenyl-2-pyrrolone, A., 498.
- 5-Ethoxytryptamine, A., 499.
- Ethyl alcohol, preparation of, from ethylene, A., 1343.
- synthesis of, B., 56.
- production of, from Jerusalem artichokes, B., 474.
- as by-product in delinting of cottonseed, B., 444.
- from ethylene, B., 395; (P.), B., 347.
- from ethylene from cracked gas, B., 395.
- from potatoes, B., 823.
- from ensiled potatoes, B., 474.
- by fermentation of sugar beets, etc., (P.), B., 921.
- from wood, B., 648.
- from wood waste, B., 1045.
- denaturant for, (P.), B., 839.
- effect of pressure on refractive index of solutions of, A., 1318.
- electric moment of, A., 567.
- molecular association and polarisation of, in various solvents, A., 1067.
- ebullioscopic constant of, A., 294.
- b.p. elevation of, by potassium iodide, A., 1318.
- distillation of, by double effect under vacuum, B., 120.
- ionisation constants of amines and acids in, A., 1321.
- surface tension of, at low temperatures, A., 15.
- surface tension of salt solutions containing, A., 1316.
- action of radon on aqueous solutions of, A., 1469.
- properties of mixtures of, with isoamyl alcohol and water, A., 1067.
- volatility of mixtures of, with benzene and heptane, A., 157.
- water-absorption and b.p. of mixtures of, with benzene and benzol, B., 1081.
- Ethyl alcohol, distribution equilibrium of, between benzene and water, A., 159.
- volume changes of mixtures of benzene and petroleum with, B., 710.
- reversibility in system, dehydrogenase, acetaldehyde and, A., 248.
- equilibria of, with ethyl ether and water, A., 303.
- water-tolerance of mixtures of gasoline with, B., 86.
- azeotropic mixtures of, with halogen compounds, A., 695.
- vapour pressure of mixtures of, with cyclohexane, A., 576; B., 484.
- stability of mixtures of hydrogen peroxide and, B., 205.
- water solubility and boiling ranges of mixtures of kerosene and, B., 133.
- flash points and explosion limits of mixtures of, with trichloroethylene, A., 1206.
- partition coefficient of, between tri-nitroolein and water, A., 696.
- diffusion coefficients in mixtures of water and, A., 1456.
- fugacities of water and, in their gaseous mixtures, A., 816.
- formation of droplets in mixtures of water vapour and, A., 25.
- formation of phenols in catalytic decomposition of, by Lebedev's method, B., 442.
- dehydration of, B., 745.
- by distillation under partial vacuum, B., 41, 474.
- by mixed catalysts, A., 1104.
- catalytic dehydration of, by alumina, A., 1210.
- simultaneous catalytic dehydration of ammonia and, A., 742.
- simultaneous catalytic dehydration of aniline and, A., 742.
- dehydrogenation and hydrogenation of, on zinc oxide deposited on charcoal, A., 1086.
- dehydrogenation of, by yeast, A., 532.
- photochemical dissociation of, A., 1211.
- catalytic oxidation of, B., 584.
- slow oxidation of, A., 172.
- pyrogenic transformations of, A., 193.
- activity of, in sulphuric acid, A., 34.
- influence of, on velocity constants of reactions, A., 1467.
- effect of substitution on reaction of, with alkyl and aryl chlorides, A., 1206.
- volatility of fuels containing, B., 342, 484.
- mixtures of gasoline and, for aero-engine fuels, B., 293.
- removal of, from musts, (P.), B., 170.
- perfusion with, A., 656.
- tolerance to, A., 117, 656.
- effect of habituation to, on metabolism, A., 1409.
- effect of physical exercise on fate of, in the organism, A., 117.
- rate of diffusion of, in the organism, A., 244.
- rôle of, in basal exchange, A., 1151.
- in the body and in blood, A., 525.
- concentration of, in blood, and its oxidation in the organism, A., 244.
- effect of dinitrophenols on disappearance of, from blood, A., 655.
- effect of, on alcohol in blood, A., 1154.
- in rabbit's blood after administration, A., 117.
- effect of, on blood-pressure, A., 655.
- as fuel in muscular exercise, A., 777, 1409.

- Ethyl alcohol**, oxidation of, by tissues, A., 387.
influence of diet on, A., 245.
in homeotherms, A., 1531.
rate of oxidation of, in the organism, A., 1016.
resorption of, in "small stomach," A., 1531.
effect of, on spleen volume, A., 1412.
absolute, production of, (P.), B., 42, 1113.
in the laboratory, B., 203.
by scrubbing with absorbent solutions, B., 41.
absorption, distribution and elimination of, A., 116.
crude, "amino-bases" in, B., 203.
fermentation and synthetic, relative toxicities of, A., 1533.
injected, fate of, A., 1274.
detection of, in organs, A., 655.
detection in, of benzene, B., 617.
of methyl, isopropyl, and amyl alcohols, with vanillin, B., 137.
determination of, volumetrically, with dichromate, B., 872.
by Widmark's method, A., 729.
in mixtures with acetone and *n*-butyl alcohol, B., 617.
in air, B., 47.
and its oxidation products, in biological substrates, A., 1044.
in blood, A., 116, 1142.
in blood and tissues, A., 116.
in mixtures with methyl and propyl alcohols, B., 539.
in essential oils, B., 828, 1023.
in organs, A., 244.
determination in, of hydrocarbons, B., 12.
of methyl alcohol, B., 424.
Ethyl alcohol, β -amino-, action of, on 2:4:5-trinitrotoluene, A., 613.
N-acyl derivatives, A., 995.
tribromo-, tolerance of carp to, A., 656.
iodo-, action of, on thiol compounds and proteins, A., 737.
Ethyl azide, explosion of, A., 938.
bromide, determination of, in animal tissues, A., 1182.
in tissues of anaesthetised animals, A., 1275.
carbonate, alkaline hydrolysis of, and its potassium salt, A., 827.
 α -cyano-, A., 1223; (P.), B., 716.
 γ -chloro- β -hydroxy-*n*-propyl, γ -diethylamino- β -hydroxy-*n*-propyl, β - γ -oxido-*n*-propyl, and γ -1-piperidino- β -hydroxy-*n*-propyl sulphides, A., 729.
dodecyl ether, A., 483.
esters, of monobasic acids, heats of crystallisation of, A., 21.
Ethyl ether, purification of, (P.), B., 715.
drying of, (P.), B., 761.
dielectric properties of, in various solvents, A., 817.
heats of reaction and viscosities of mixtures of chloroform and, A., 439.
molecular heat of, A., 1063.
convection currents in layers of, on mercury, A., 807.
quadruple point in systems of water and, A., 35.
equilibria of, with ethyl alcohol and water, A., 303.
inflammability of, in air and oxygen, A., 1206.
ignition temperatures of, A., 1327.
oxidation of, in presence of active carbon and reactions of product, A., 456.
autoxidation of, A., 454.
- Ethyl ether**, use of, as solvent for aluminium chloride, in organic synthesis, A., 63.
starting temperatures of engines using ethyl alcohol and, as fuel, B., 342.
anaesthesia with. See under Anaesthesia.
dosage with, after pre-anaesthetic treatment with narcotics, A., 1410.
anaesthetic, testing stability of, with ultra-violet light, B., 173.
determination of, in air, B., 47.
Ethyl halides, ultra-violet absorption spectra and ionisation potentials of, A., 913.
hydroperoxide, combination of, with haemoglobin, A., 372.
iodide, hydrolysis of, A., 710.
gaseous, photochemical decomposition of, A., 48, 178.
liquid, quantum yield in photo-decomposition of, A., 48.
reactions of, with pyridine and with sodium ethoxide, A., 1082.
determination of, in estimation of cardiac output, A., 371.
nitrite, decomposition of, A., 471.
reaction of, with isopropyl and cyclohexyl ketones, A., 1481.
sulphide. See Diethyl sulphide.
tetraethioorthosilicate, A., 326.
1-Ethylaceneaphthene, and its picrate, A., 969.
Ethylacetoacetic acid, α' -hydroxy-, derivatives of, A., 65.
2-Ethylacetophenone, 4-hydroxy-, and its derivatives, A., 766.
Ethylalloxazine, A., 95.
9-Ethylalloxazine, β -hydroxy-, A., 94.
5-Ethyl-5-allyl-2-thiobarbituric acid, A., 1507.
Ethylamine, *mono*-, *di*-, and *tri*-hydroxy-, electric moments of, A., 1447.
Ethylamines, chlorinated, A., 849.
 β -substituted, A., 1232, 1491.
 β -Ethylamino- α -benzylethyl ethyl ether, A., 81.
2-Ethylamino-5-carboxyphenylarsinic acid, 2- β -hydroxy-, A., 637.
 β -Ethylaminoethylglyoxaline, and its hydrochloride and picrate, (P.), B., 830.
2- β -Ethylaminoethylquinoline, and its benzoyl derivative, A., 499.
4- β -Ethylaminoethylquinoline, and its derivatives, A., 500.
4(5)- β -Ethylaminoglyoxaline salts, A., 759.
9- β -Ethylamino- α -hydroxy-*n*-propyl-1:2:3:4:5:6:7:8-octahydrophenanthrene, and its salts, A., 973.
4-Ethylamino-1:2-naphthaquinone, A., 585.
6-Ethylamino-2-naphthylarsinic acid, β -hydroxy-, A., 100.
9- α -Ethylaminopropionyl-1:2:3:4:5:6:7:8-octahydrophenanthrene, and its salts, A., 973.
4-Ethylaminopyridine, 3-amino-, 4- β -amino-, and its acetyl derivative, 5-bromo-3-nitro-, 4- β -hydroxy-, and its hydrochloride, and 3-nitro-, A., 993.
2-Ethylaminopyridine-5-arsinic acid, A., 1156.
Ethylaminothiomethanesulphonic acid, potassium salt, A., 332.
3-Ethylamino-*p*-tolyl methyl ether, and its β -hydroxyethyl derivative and picrate, (P.), B., 93.
Ethyl-*n*-amylcarbamide, A., 1155.
5-Ethyl-5-isoamyl-2-thiobarbituric acid, A., 1507.
Ethylaniline, catalytic preparation of, A., 742.
Ethylaniline, β -amino-, and its dihydrobromide, (P.), B., 940.
- N*-Ethylaniline**, *N*- β -hydroxy-, benzoates of, A., 854.
8-Ethylanilino- β -dimethyl-*n*-heptane, and its hydroferrocyanide, A., 736.
N-Ethylanilino-4'-cyclohexene, A., 742.
 α -*N*-Ethylanilino-*p*-methylstyrene, A., 742.
 γ -Ethylanilino-*n*-pentane, and its salts, A., 736.
 α -*N*-Ethylanilinostyrene, A., 742.
Ethylanisidines, A., 1488.
Ethylanisylcarbamides, A., 1488.
10-Ethylanthranol peroxide, A., 1369.
1-Ethylanthraquinone, 2-chloro-, (P.), B., 622.
Ethylapiole, β -amino-, and its hydrochloride, and their pharmacological action, A., 485.
Ethylanisylcarbamides, A., 1507.
Ethylbenzene, 3-nitro-4-amino-, A., 95.
2-Ethylbenzoic acid, 3:4:5-trihydroxy-2- β -dichloro-, and its methyl ester, A., 619.
2-Ethyl-1:2:3-benzotriazole, A., 360.
Ethylbindone, and bromo-, and nitro-, A., 623.
N-Ethyl-*p*-bromobenzenesulphon-*p*-anisidide, and β -hydroxy-, A., 193.
 β -Ethylbutyl alcohol, production of, (P.), B., 262.
esters, (P.), B., 715.
Ethyl- γ -butylbenzene, 2:6-dinitro-, A., 342.
1-Ethyl-4-*tert*-butylbenzoic acid, and its nitrile, A., 342.
Ethylbutylcarbamides, A., 1155.
5-Ethyl-5-butyl-2-thiobarbituric acids, A., 1507.
 α -Ethylbutyric acid, γ -bromo-, and γ -hydroxy-, ethyl esters, A., 1224.
 α -hydroxy-, ethylidene and methylene esters, A., 731.
 α -Ethylbutyrylcarbamide, α -bromo-, microchemical reactions of, A., 72.
Ethylcarbimide, dipole moment of, A., 916.
Ethylcarbonic acid, α -cyano-, methyl ester, (P.), B., 716.
5-Ethyl-6-carboxyphenylacetic acid, 2:3:4-trihydroxy-5- β -dichloro-, triacetyl derivative, A., 620.
Ethylcellulose, dielectric study of benzene solutions of, A., 1319.
viscosity of benzene solutions of, A., 1459.
decreasing viscosity of, B., 1135.
5-Ethyl-5- γ -chloro-4- β -butenyl-2-thiobarbituric acid, A., 1507.
Ethylethlorophyllide *b*, partial synthesis of, A., 362.
N-Ethyl-di-(β -anilinoethyl)-amine, β -hydroxy-, hydrobromide, A., 71.
1-Ethylidibenzfuran, 1- β -bromo-, and -hydroxy-, A., 986.
3-Ethylidibenzfuran, 3- β -bromo-, and -hydroxy-, A., 986.
1'-Ethylidihydrobenzthiazolyl-2:2'-dimethenylindan-1:3-dione, production of, (P.), B., 894.
1'-Ethylidihydrobenzthiazolyl-1:2'-dimethenylindan-2-one, production of, (P.), B., 894.
1'-Ethylidihydrobenzthiazolyl-2:2'-indan-1:3-dione, production of, (P.), B., 894.
Ethylidihydrocupreine, β -hydroxy-, and its derivatives, A., 636.
1-Ethyl-1:2-dihydropyridine, 2-imino-1- β -hydroxy-, and its derivatives, A., 758.
1-Ethyl-3:7-dimethylcaftolide, A., 225.
Ethyl- α -di-*n*-propylcarbamide, A., 1155.
3-Ethyl-diisopropylideneglucose, A., 68.
Ethyl-*n*-dodecylamine, and its hydrochloride, A., 71.
Ethylene, electron configuration of, A., 1188.

- Ethylene**, moments of inertia and shape of molecules of, A., 1448.
 preparation of, A., 191.
 production of, from acetylene, B., 394.
 by cracking of hydrocarbon oils, (P.), B., 343.
 from carbonisation products of peat and from cracked tar, B., 6.
 from high-boiling petroleum fractions, B., 709.
 and its homologues, recovery of, from gases, (P.), B., 537.
 separation of, from olefine mixtures, (P.), B., 1084.
 rotational level of, A., 810.
 vibration frequency of, A., 1053, 1057.
 absorption spectrum of, A., 1188.
 flame spectrum of, A., 279.
 heat of hydrogenation of, A., 304.
 adsorption of, by cuprous chloride, A., 957.
 by nickel, A., 441.
 solubility of, in various solvents, A., 1067.
 equilibrium and heat of hydrogenation of, A., 1076.
 thermal equilibrium of, with its iodide and iodine, A., 1460.
 equilibrium of, with ethane and hydrogen, A., 934.
 with methane, A., 447.
 inflammability of, in air and oxygen, A., 1206.
 ignition temperatures of, A., 1327.
 explosion of, B., 835.
 addition of, to ammonia, A., 849.
 addition of bromine to, in solution, A., 1465.
 combination of, with hydrogen and with deuterium, A., 938.
 hydrogenation of, by heavy hydrogen, A., 175.
 with light and heavy hydrogen, A., 1329.
 on platinum, A., 589.
 polymerisation of, induced by methyl radicals, A., 1084.
 combustible liquid obtained by, A., 191.
 polymerisation and decomposition of, A., 1081.
 pyrolysis of mixtures of, with ethane and hydrogen, A., 40.
 condensation of, and acetylene, B., 442.
 with carbonyl chloride, A., 845.
 effect of oxygen on action of, with hydrogen, A., 939.
 activity of, in sulphuric acid, A., 34.
 derivatives, influence of substituents on additive reactivity of, A., 1103, 1465.
 catalytic bromination of, A., 1103.
 reaction of, with bromine, in methyl alcohol, A., 603.
 addition of sulphur dioxide to, A., 604.
 dibromide, conductivity of tetra-alkylammonium salts in, A., 705.
 crystalline, molecular size of, A., 156.
 action of, on *N*-methylpiperidine, A., 1250.
 dichloride, conductivity of, in tetra-alkylammonium salts, A., 705.
 cryoscopic study of, A., 1322.
 crystalline, molecular size of, A., 156.
 activity coefficients of salts in, A., 166.
 reaction of, with chlorine, A., 325.
 chlorohydrin, b.p. and equilibrium of mixtures of, with water, A., 575.
 glycol acetate, separation of paraffins and petroleum products from oils with, B., 836.
 halides, vibrational frequency of, A., 1448.
- Ethylene halides**, Raman spectrum of, A., 428.
 diiodide, thermal equilibrium of, with ethylene and iodine, A., 1460.
 photochemical reaction of, with iodine in carbon tetrachloride, A., 832.
 formation of acetylene and butadiene from, by action of high-frequency discharge, A., 192.
 preparation of alcohol from, A., 1343.
 production of lubricating oils from, B., 889.
 action of, on cell processes, A., 1165.
 on plants, A., 1548.
 production of, by ripening fruits, A., 265.
 treatment of fruits with, B., 172.
 absorption and elimination of, from the body, A., 525.
 determination of, B., 392.
 determination in, of propylene, B., 442.
Ethylene, chloro-derivatives, Kerr effect in, A., 810.
 dichloro-, production of, (P.), B., 1129.
 catalytic reaction of, with chloroform, A., 605.
 cis- and *trans*-dichloro-, ultra-violet absorption spectra of, A., 1299.
 torsion oscillation of, A., 1448.
 trichloro-, flash points and explosion limits of mixtures of, with ethyl alcohol, A., 1206.
 as solvent in histology, A., 378.
 anæsthetic properties of, A., 1532.
 as analgesic and anæsthetic, A., 893.
 tetrachloro-, condensation of, with chloroform, A., 470.
 anthelmintic action of, B., 828.
 s-diiodo-, crystal structure of, A., 1195.
Ethylene glycol, preparation of, from dichloroethane, A., 193.
 production of, B., 1035.
 from dichloroethane, (P.), B., 395.
 systems of, with water, A., 290.
 multiple condensation of fumaric and maleic acids with, A., 474.
 diacrylate and α -methylacrylate, manufacture of, (P.), B., 363.
 esters of phthalic and succinic acids and, (P.), B., 762.
tert-amyl ether, manufacture of, (P.), B., 715.
 benzyl ethers, A., 1481.
 benzyl ethyl, ethyl *n*-butyl, cyclohexyl isoamyl, methyl *n*-butyl, phenyl isoamyl, and phenyl benzyl ethers, A., 483.
 mono- and *di*-*p*-toluenesulphonates, A., 636.
Ethylene oxide, preparation of, A., 194.
 manufacture of, (P.), B., 839, 938.
 vaporiser for, B., 832.
 hydration of, A., 63.
 reaction of, with acetylenic Grignard reagents, A., 193, 470.
 with hydrogen sulphide, A., 606.
 with *m*-phenylenediamine, A., 969.
 monohydrate, A., 606.
Ethylenediaminodiethylgold aurocyanide, A., 1112.
Ethylenediaminodi-*n*-propyldibromogold, A., 480.
Ethylenediaminodi-*n*-propylgold aurocyanide, A., 1112.
Ethylenediaminotetra-*n*-propyldibromogold, A., 480.
Ethylenediaminotetra-*n*-propyldicyanogold, A., 1112.
Ethylenediamine, reaction of, with ethyl oxalate, A., 1106.
 complex gold salts of, A., 1227.
 derivatives, alkylated, A., 855, 1118.
 normal fatty acid amides of, A., 1487.
- 1:4-endoEthylene-1:4-dihydronaphthacenequinone**, hydroxy-, A., 218.
Ethylene- α - β -dioxamic acid, esters, and their derivatives, A., 202.
 diethyl ester, A., 1106.
endo-3:6-endoEthylenehexahydrophthalic acids, 4:5-dibromo-, and 4-bromo-5-hydroxy-, and their derivatives, A., 212.
Ethylenetetracarboxylic acid, reaction of, with phosphorus pentachloride, and its derivatives, A., 328.
trans-3:6-endoEthylene- Δ^4 -tetrahydrophthalic acid, A., 212.
exo-cis-3:6-endoEthylene- Δ^4 -tetrahydrophthalic anhydride, A., 212.
Ethylenetricarboxylic acid, chloro-, triethyl ester, A., 328.
Ethylenic compounds, *cis-trans* isomerism of, A., 957.
 index of unsaturation of, A., 843.
 trisubstituted, Raman effect in, A., 957.
Ethylenic linkings. See Linkings, double.
5-Ethyl-5- β -ethylbutyl-2-thiobarbituric acid, A., 1507.
2-Ethyl-4-*p*-fluorophenylthiazole, and its derivatives, A., 1385, 1386.
 β -Ethylfructoside tetra-acetates, A., 735.
2-Ethylfuran, and its morcurichloride, A., 866.
1-(α -Ethylfurfuryl)cyclopropane-1-carboxylic acid, 1- α -hydroxy-, ethyl ester, and its benzoyl derivative, A., 1503.
Ethylglucamine, manufacture of, (P.), B., 539.
Ethylglyoxaline, hydroxy-, effect of, on gastric secretion and blood-pressure, A., 1411.
4-Ethylglyoxaline, β -hydroxy-, and β -chloro-, production of, (P.), B., 829.
4(5)-Ethylglyoxaline, 4(5)-chloro-, hydrochloride, A., 759.
4(5)- β -hydroxy-, and its picrate, A., 759.
Ethyl-*n*-heptylamine, and its hydrochloride, A., 71.
 α -Ethylhexaldehyde, electric moment of, A., 1447.
Ethylcyclohexane in a Mid-Continent petroleum, B., 1030.
 β -Ethylhexan- α -ol, electric moment of, A., 1447.
2-Ethylcyclohexanols, and their derivatives, A., 342.
1-Ethyl- Δ^1 -cyclohexene, oxidation of, A., 852.
1-Ethylcyclohexen-6-ol, A., 852.
1-Ethylcyclohexenyl acetate, A., 852.
Ethyl-*sec*-.hexylbarbituric acid, and its salts, manufacture of, (P.), B., 1165.
***C*- β -Ethylhexyl-*m*-cresol**, manufacture of, (P.), B., 761.
Ethylhexylmalonic acids, diethyl esters, manufacture of, (P.), B., 1165.
***C*- β -Ethylhexylresorcinol**, manufacture of, (P.), B., 761.
5-Ethyl-5-*n*-hexyl-2-thiobarbituric acid, A., 1507.
***N*-Ethyl-8-hydroxytetrahydroquinoline**, hydrochloride, detection of arsenic with, A., 184.
Ethylenedene-3:3'-diamino-4:4'-dimethoxy-*m*-dibenzoylbenzene, *s*-trichloro-, A., 753.
 ω -Ethylenedene- β -ionone, and its semicarbazidosemicarbazone, A., 609.
Ethylenelactic acid, distribution of, between water and aliphatic alcohols, A., 929.
Ethylenedene-4-nitro-*o*-toluidine, $\beta\beta\beta$ -trichloro-, A., 76.
trans-2- α -Ethylenedene-*n*-propyldiphenyl-2'-carboxylic acid, A., 1496.

- 3-Ethylindolenine, 3- β -hydroxy-, A., 1378.
 3-Ethylindolenone, A., 1387.
 2-Ethylindolyl-3-acetic acid, A., 1352.
 Ethyl ketones, aliphatic, Raman spectra of, A., 281.
 Ethylmercuthiosalicilic acid, ephedrine esters, (P.), B., 206.
 5-Ethyl-5- β -methylallyl-2-thiobarbituric acid, A., 1507.
 5-Ethyl-5- β -methylbutylbarbituric acid, and its sodium salt, production of, (P.), B., 924.
 Ethyl- β -methylbutylmalonic acid, diethyl ester, (P.), B., 924.
 5-Ethyl-5- α -methylbutyl-2-thiobarbituric acid, A., 1507.
 γ -Ethyl- ζ -methyl-4- ϵ -hepten- β -one, γ - α' -hydroxy-, and its semicarbazone, A., 605.
 "4-Ethylmyrtenyl alcohol," A., 1376.
 3-Ethyl- α - β -naphtha-1:2:3-triazole, A., 359.
 1-Ethyl- β -naphthol, and its benzoyl derivative, A., 744, 970.
 5-Ethylnerolin, and its picrate, A., 753.
 9-Ethyl-1:2:3:4:5:6:7:8-octahydrophenanthrene, 9- β -amino- α -hydroxy-, and its salts, A., 973.
 Ethylolamine, reactivity and pH of, A., 849.
 2-Ethyl-2-oxazoline, and its picrate, A., 995.
 Ethylparacetic acid. See γ -Pilocic acid.
 γ -Ethylpentane- β -diol, A., 199.
 2-Ethylcyclopentanols, configuration of, and 2-hydroxy-, and their derivatives, A., 340.
 2-Ethylcyclopentanone, and its semicarbazone, A., 324.
 2-Ethylcyclopentanone-2-carboxylic acid, ethyl ester, A., 342.
 2-Ethylcyclopentanone-2:5-dicarboxylic acid, ethyl ester, A., 961.
 Ethyl- m -phenetidine, A., 1488.
 Ethylphenethylcarbamides, A., 1488.
 Ethylphenols, compounds of, with cincolo and m -5-xylidine, A., 744.
 o - and p -Ethylphenol- β - d -glucosides, and their tetra-acetyl derivatives, A., 964.
 dl -10-Ethylphenoxarsine-2-carboxylic acid, and its strychnine salts, A., 1390.
 4-Ethyl- B -1-phenylbenzanthrone, A., 1124.
 9- p -Ethylphenylfluorine, 9-chloro-, A., 1358.
 9- p -Ethylphenylfluorenyl 9-peroxide, A., 1358.
 o -Ethylphenylglyoxylic acid, o - α' -hydroxy-, A., 980.
 N' -Ethyl- N -phenylpiperazine, β -bromo-, dihydrobromide, and β -hydroxy-, and its derivatives, A., 358.
 p -Ethylphenyl styryl ketone, A., 1369.
 N -Ethylphthalimide, N - β -hydroxy-, A., 619.
 1-Ethylpiperazine salts, A., 629.
 1-Ethylpiperidine ethochloride, and its salts, A., 874.
 1-Ethylpiperidine-3-carboxylic acid, derivatives of, A., 92.
 α -Ethylpropiobetaine, and its hydrochloride, A., 331.
 α -Ethylpropiobetainic acid. See α -Trimethylammonio- α -methyl- n -butyric acid.
 α -Ethylpropyl formate and methoxyacetate, A., 473.
 α -Ethyl- β -propylacetaldehyde, hydrogenation of, (P.), B., 585.
 p -Ethyl- n -propylarsinobenzoic acid, and its salts and mercuric chloride derivatives, A., 875.
 Ethyl- n -propylcarbamides, A., 1155.
 2- α -Ethyl- n -propyldiphenyl-2'-carboxylic acid, 2- β -bromo- and -iodo- α -hydroxy-, lactones of, A., 1496.
 2- α -hydroxy-, and its sodium salt and lactone, A., 1496.
 s -Ethylpropylethylene oxide, and its reaction with zinc chloride, A., 194.
 $\beta\beta$ -Ethylpropylglutaric acid, methyl ester, A., 65.
 Ethylisopropylglyoxime, A., 1481.
 2-Ethyl-2'- n -propylthia-1-cyanine iodide, A., 224.
 5-Ethyl-5-isopropyl-2-thiobarbituric acid, A., 1507.
 2-Ethylpyridine, 3:6-diamino-, production of, (P.), B., 894.
 9-Ethyl-3:4-pyridino-7:8:9-triazole, and its salts, and 5-bromo-, 9- β -chloro-, and 9- β -hydroxy-, A., 993.
 1-Ethylpyridone, 1- β -hydroxy-, A., 627.
 1-Ethylpyridoneimine, 1- β -hydroxy-, A., 627.
 6-Ethylpyrimidine, 4:5-diamino-, 2-chloro-4:5-diamino-, and -5-nitro-4-amino-, and 2:4-dichloro-5-nitro-, A., 1381.
 4-Ethylpyrimidine-5-sulphonic acid, 6-amino-, A., 504.
 Ethylsulphanilic acid, β -hydroxy-, calcium salt, production of, (P.), B., 263.
 Ethylsulphinic acid, n -butyl and ethyl esters, A., 1105.
 p -Ethylsulphonylphenylarsinic acid, A., 228.
 Ethyl-4:5:6:7-tetrahydroindoles, A., 870.
 Ethyl-4:5:6:7-tetrahydroindolecarboxylic acids, and their ethyl esters, A., 870.
 1-Ethyltetrahydronaphthalene, A., 481.
 2-Ethyltetrahydropyran, and 3-bromo-, A., 626.
 Ethyl-1:3:5:8-tetramethyl-2:4-diethylporphin, β -amino-, derivatives of, A., 363.
 2-Ethylthiol-6-acetyldithiourethano-5-ethylpyrimidine, A., 358.
 2-Ethylthiol-5-carbethoxypyrimidine, 6-chloro-, action of potassium cyanate on, A., 629.
 2-Ethylthiol-5-ethylpyrimidine, 6-chloro-, A., 358.
 2-Ethylthiol-5-ethyluracil, A., 358.
 4(5)-Ethyl-2-thioglyoxaline, 4(5)- β -hydroxy-, A., 759.
 3-Ethylthiol-2-methylfuran-5-carboxylic acid, and its barium salt, A., 497.
 p -Ethylthiolphenylarsinic acid, A., 228.
 2-Ethylthiol-3-phenyl-3:4-dihydroquinazoline, 4-hydroxy-, and its perchlorate, A., 630.
 2-Ethylthiol-5-phenylpyrimidine, 6-chloro-, and 6-thiocyano-, A., 629.
 2-Ethylthiol-6-phenylthiocarbamidopyrimidine, A., 358.
 2-Ethylthiolpyrimidine-5-acetic acid, 6-chloro-, ethyl ester, A., 629.
 6-thiocyano-, rearrangement of, A., 629.
 2-Ethylthiol-6-thiocarbamidopyrimidine, A., 358.
 2-Ethylthiol-6-thiocyano-5-ethylpyrimidine, and its molecular rearrangement, A., 358.
 2-Ethylthiol-6-thiourethano-5-ethylpyrimidine, A., 358.
 2-Ethylthiophen, 3-thiol-, A., 1249.
 Ethylthiophthen, and its picrate, A., 1249.
 6-Ethyl-2-thiouracil, A., 1381.
 p -Ethyltoluene, dipole moment of, A., 684.
 Ethyl- m -toluic acids, 5-hydroxy- β -dichloro-, A., 748.
 Ethyl- o -toluidine, preparation of, A., 1118.
 preparation of rhodamines from, A., 206.
 N -Ethyl- m -toluidine, 4:6-dinitro- N - β -hydroxy-, A., 613.
 Ethyltolylcarbamides, A., 1488.
 Ethyl- γ -triazine, aminohydroxy-, and its salts, A., 1254.
 6-Ethyluracil, 5-nitro-, A., 1381.
 Ethylvinylacetylene, manufacture of, (P.), B., 147.
 Ethyl-violet, solvation and aggregation in ethyl alcohol solutions of, A., 1074.
 Ethynal, fate of, in the body, A., 1154.
Eucalyptus, identification of woods of, B., 592.
 physiological forms of, B., 654.
Eucalyptus citriodora, Seychelles, oil from, B., 524.
Eucalyptus micrantha, essential oils of, B., 45.
 Eucalyptus oil, detection of, in pine-needle extract, B., 973.
 Eucarvone, action of, with maleic anhydride, and with phenyl oxide, A., 350.
 Euclase, A., 842.
 Eucoel, excretion of, A., 118.
 Eucoeloids, dielectric measurements with, A., 163.
 Eudesmin, relation of, to pinosresinol, A., 627.
 Eudesmin, dl -dibromo-, and dl -dinitro-, A., 627.
 Euflavine, determination in, of diamino-acridine, B., 877.
 Eugenol, dissociation constant of, A., 823.
 derivatives, reactivity and Raman spectra of, A., 1446.
 isoEugenol derivatives, A., 1362.
 isoEugenol, β -nitro-, A., 1362.
 n - and iso-Eugenols, Raman spectra of, A., 807.
 isoEugenols, stereoisomeric, configuration and physical constants of, A., 1120.
 isoEugenol- β - d -glucoside, A., 1536.
Euglena gracilis, photodynamics of green and colourless forms of, A., 419.
Euphorbia cyparissias, invertase in latex of, A., 674.
 Europium, at. wt. of, A., 425.
 structure of, A., 1046.
 spectrum of, A., 1438.
 absorption spectrum of, in the crystalline sulphate, A., 1443.
 arc spectrum of, A., 137.
 magnetic moment and spherical symmetry of, A., 804.
 Europium compounds, production of, A., 180.
 Europium salts, bivalent, fluorescence of, A., 282.
 Europium chloride, sp. gr. of, A., 425.
 Europium separation:—
 separation of, from rare earths, A., 1333.
Eurycles amboinensis, alkaloid of, A., 551.
 Eutectics, effect of pressure on, A., 447.
 crystallisation of, A., 23.
 Eutectic point, physico-chemical characteristics of, A., 1325.
 "Eutonon," substances affecting circulation in, A., 1156.
 Evaporation, (P.), B., 130.
 laws of, B., 82.
 instrument for measuring, A., 1343.
 in turbulent atmospheres, B., 1.
 of liquid mixtures, A., 290.
 of binary liquid mixtures, A., 157.
 film, of liquids, (P.), B., 84.
 spray, apparatus for, (P.), B., 84.
 volumetric determination of rate of, B., 1025.
 Evaporation apparatus, A., 1219; B., 530; (P.), B., 930.
 vacuum, A., 724.
 Evaporators, B., 1; (P.), B., 435, 579, 788.
 control of, (P.), B., 579.
 regulation of, for turbines, etc., (P.), B., 610.
 heat transfer in, B., 529.
 corrosion of, in sugar factories, B., 692.
 for acids, (P.), B., 610.

- Evaporators, concurrent, (P.), B., 387.
 film, rotary-drum, (P.), B., 658.
 Evap-o-rotor, B., 860.
 Excreta, bird's, determination in, of uric acid, A., 648.
 mixed, of fowls, determination of undigested protein in, A., 380.
 Excretin, cholagogue action of, A., 901.
 Expansion apparatus, radial-motion, A., 599.
 Expansion coefficients, linear, determination of, with Schevenar dilatometer, B., 272.
 Explosions, theory of, B., 335.
 mechanism of, A., 451, 586.
 determination of pressures of, A., 1080.
 pressure wave of, B., 126.
 at reduced pressure, A., 1080.
 ranges of, A., 1081.
 flame movement and ionisation current in, A., 451.
 in factories and works, B., 1024.
 prevention of, in pipes, B., 837.
 of gases, afterglow in, B., 1167.
 effect of electric fields on, B., 979.
 anomalous pressures and vibrations in, A., 586.
 of mixed gases, spin in detonation of, A., 1463.
 flame movements in, A., 1463.
 of solids, B., 879.
 degenerate, theory of, A., 451.
 Explosion waves, effect of mechanical counter-wave on, B., 1167.
 and shock waves, B., 479.
 Explosives, (P.), B., 831, 926, 1070, 1119.
 structure and explosive power of, A., 938.
 production of, (P.), B., 207, 383.
 by nitration of quebrachitol, (P.), B., 383.
 prevention of fires and explosions in factories for, B., 1024.
 fuses, igniter charges, etc., for, (P.), B., 879.
 ignition compositions for, (P.), B., 1119.
 priming compositions for, (P.), B., 127, 704, 751, 879.
 brisance of, B., 335.
 determination of, B., 607.
 burning of, B., 430.
 luminosity in detonation of, A., 713; B., 1070.
 energy and capacity for work of, on detonation, B., 607.
 efficiency of detonants for, B., 879.
 effect of rate of detonation on velocity of shock-wave of, B., 656.
 rapid deflagration and double detonation of, B., 607.
 measurement of pressures developed by, B., 751.
 pressures for, producing gases rich in water vapour, B., 831.
 coating materials for, (P.), B., 656.
 starch nitrates as, B., 175.
 chemical stability of, B., 607.
 ammonium nitrate, (P.), B., 1167.
 use of, for underground work, B., 575.
 ballistic powder, influence of fireproofing salts on composition of combustion gases from, B., 831.
 blasting, (P.), B., 879, 1167.
 production of, (P.), B., 207.
 thermostat for stability test on, B., 1167.
 cellulose nitrate, density and stability of, B., 655.
 chlorate, stabilisation of, B., 751.
 Explosives, coal-mining, ignition of methane by, B., 335.
 colloidal powder, rate of combustion of, in inert atmospheres, B., 526.
 detonant, stability of, to heat, B., 1119.
 flash, manufacture of, (P.), B., 383.
 gelatinised, (P.), B., 383.
 liquid air, or liquid oxygen, (P.), B., 479.
 liquid oxygen, (P.), B., 335, 751, 926.
 low-density, (P.), B., 383.
 powder, determination in, of moisture, B., 255.
 powder B, moisture content of, B., 831.
 influence of length of tempering on coefficient of emission and solvent content of, B., 831.
 powder B and cotton powder, stability test for, B., 831.
 powder BM-D₂, lowering of tempering temperature of, B., 831.
 CP powder, nitrogen and soluble matter in, from Angoulême and Moulin-Blanc, B., 831.
 propellant, production of, (P.), B., 575*.
 propellant powder, (P.), B., 383.
 manufacture of, (P.), B., 479, 704.
 determination in, of diphenylamine and carbamides, B., 334.
 smokeless powder, manufacture of, (P.), B., 383, 430.
 stability and p_H of, B., 255.
 Bergmann-Junk-Mayrhofer stability test for, B., 607.
 observation of brown fumes in stability tests on, B., 1024.
 determination of combustion temperature of, B., 879.
 extraction of diphenylamine from, (P.), B., 751.
 Hanyang, moisture content of, B., 703.
 nitrocellulose, stabilisation of, by tartaric acid, B., 47.
 determination in, of diphenylamine, B., 879.
 testing of, B., 751.
 Extensometer, interference, A., 599.
 Extraction, A., 1476.
 application of Ponchon graphical analysis to, B., 577.
 liquid-liquid, B., 756.
 solvent, graphical correlation of data on, B., 753.
 Extraction apparatus, A., 724; (P.), B., 51, 578, 610, 1076, 1122.
 test-tube for, A., 840.
 for separation of oils, etc., (P.), B., 4.
 for solids, upward flow, A., 321.
 centrifugal, (P.), B., 787.
 continuous, (P.), B., 51.
 laboratory, for aqueous solutions, A., 189.
 micro-, A., 600.
 Soxhlet, A., 1218.
 modified, A., 724, 1343.
 Extrusion, plastic compositions for, (P.), B., 853.
 Extrusion presses, (P.), B., 754.
 Eyes, physical chemistry of internal pressure in, A., 1144.
 effect of menformone on pressure in, A., 667.
 argyrosis of, A., 399.
 action of colloidal solutions of carotene on, A., 415.
 action of *l*-hyoscyamine on, B., 700.
 choroid, cornea, iris, and sclera of, lipins in, A., 511.
 cornea of, chemistry of, A., 511.
 aqueous humour of, ascorbic acid in, A., 1546.
 Eyes, aqueous humour of, after administration of vitamin-C, A., 546.
 ascorbic and dehydroascorbic acids in, A., 1176.
 determination of copper in, A., 232.
 aqueous humour and lens of, antiscorbic properties of, A., 669.
 vitreous humour of, swelling of, A., 232, 771.
 polysaccharide from, A., 232.
 iris of, cultures *in vitro* of epithelial cells of, A., 1412.
 antagonism of drugs in epithelium cultures of, A., 894.
 lens of, pharmacology of active principles of, A., 528.
 ascorbic acid in, on scorbutigenic diet, A., 546.
 effect of vitamin-B deficiency on oxidation-reduction in, A., 544.
 antiscorbic action of, A., 232.
 retina of, respiration of, A., 1150.
 fish, flavin from, A., 1145.
 frog's, action of melanophorie hormone on, A., 1422.
 ox, ascorbic acid in vitreous humour of, A., 416.
 of normal and rachitic rats, determination of p_H of aqueous humour of, A., 1524.
 F.
 Fabrics, treatment of, with rubber dispersions, (P.), B., 354.
 apparatus for, with liquids, (P.), B., 626.
 treatment of strips of, with solvents, (P.), B., 303.
 cleaning fluid for, (P.), B., 59.
 calendering of, (P.), B., 801.
 carbonisation of, (P.), B., 186.
 coating of, with metals, (P.), B., 1099.
 with rubber latex, (P.), B., 267, 738.
 apparatus for coating and filling of, (P.), B., 848.
 delustring of, (P.), B., 98.
 detergents for, (P.), B., 898.
 dressing of, (P.), B., 627.
 dyeing and finishing machines for, B., 1139.
 cellulose filler dressing for, (P.), B., 542.
 Fixapret B in fast-to-washing fillings for, B., 353.
 high-glaze finish for, (P.), B., 145.
 fulling of, (P.), B., 19.
 impregnation of, with synthetic resins, (P.), B., 450.
 washing and impregnation of, (P.), B., 766.
 proofing of, with rubber, B., 369, 685.
 apparatus for shrinking of, (P.), B., 670.
 removal of stains from, (P.), B., 542.
 waterproofing of, (P.), B., 354.
 adhesives for metals and, (P.), B., 917.
 influence of atmospheric sulphur on dyes and, B., 540.
 weaving of coloured patterns in, (P.), B., 185.
 production of half-tones on, by Uviol sample process, B., 830.
 production of lamb-skin texture on, (P.), B., 945.
 determination of crêpage in, B., 1038.
 reduction of static electrical effects with, (P.), B., 765.
 insecticide for, (P.), B., 848.
 aeroplane, tautening of, by cellulose acetate and nitrate dopes, B., 775.

- Fabrics, aircraft, moisture relations of, B., 488.
 antiseptic, B., 721.
 artificial, containing resins, (P.), B., 185.
 balloon. See Balloon fabrics.
 containing "cable twist" yarn, irregular colouring in, B., 19.
 cellulose, finishing of, (P.), B., 1140.
 coated, (P.), B., 946.
 production of, (P.), B., 1042, 1091.
 composite, manufacture of, (P.), B., 943.
 cotton. See Cotton fabrics.
 cotton-wool, dyeing of. See under Dyeing.
 crêpe, production of crinkled patterns on, (P.), B., 542.
 production of figured effects in, (P.), B., 989.
 dyed, apparatus for determination of fastness of, to light, B., 267.
 increasing washing fastness of, (P.), B., 1042.
 stripping of, (P.), B., 1042.
 fire-resistant, for aircraft, B., 626.
 flocked, manufacture of, (P.), B., 799.
 gas- and fire-proof, manufacture of, (P.), B., 1041.
 gas-cell gelatin-latex, effect of protective coatings on absorption of moisture by, B., 1038.
 knitted, machine for drying and finishing of, (P.), B., 145.
 knitted and woven, creasing of, B., 846.
 metal-coated, (P.), B., 670.
 mixed, manufacture of, (P.), B., 223.
 multi-ply, manufacture of, (P.), B., 450.
 printed with vat dyes, development of, (P.), B., 185.
 rayon crêpe, B., 398.
 rubberised, manufacture of, (P.), B., 303.
 textile, finishing of, (P.), B., 989.
 glazing, embossing, and finishing of, (P.), B., 542.
 reaction between detergents and, in washing, B., 765.
 significance of metals in, B., 670.
 washable, production of, (P.), B., 58.
 waterproof, manufacture of, (P.), B., 303.
 translucent, treatment of, (P.), B., 625.
 tubular, apparatus for treatment of, (P.), B., 766.
 waterproof, manufacture of, (P.), B., 402.
 white, blueing of, after laundering, (P.), B., 449.
- Factories, explosions in, B., 1024.
- Fæces, influence of vitamin-D on p_H of, A., 547.
 relation of pancreas to hydrolysis in, A., 513.
 volatile fatty acids excreted in, A., 653.
 excretion of copper in, A., 235.
 excretion of folliculin in, A., 128.
 excretion of urobilin in, A., 107.
 constituents of, in scurvy, A., 1149.
 children's, physical chemistry of, in relation to diet, A., 380.
 dog's, purification of active phosphatase in, A., 1279.
 human, distribution of sterols in, A., 774.
 digestion of, for production of fertilisers, B., 1120.
 determination in, of cellulose, hemicellulose, and lignin, A., 648.
 of fat, A., 235.
 of phosphorous, A., 1525.
- Fagus silvatica*. See Beech.
- Faellite, B., 1152.
- Faraday effect, at high frequencies, A., 141.
 of solutions of strong electrolytes, A., 1318.
- Farinograms, graphical and numerical evaluation of, B., 1018.
- Farinographs, B., 171.
 determination of proteolytic activity with, B., 425.
- Farms, Wiskiauten and Wosegau, development of, B., 699.
- Farnesinal, and its semicarbazone, A., 1353.
- Farnesinol, A., 1353.
- Fasting, ketogenesis during, A., 891.
- Fat or Fats, B., 317.
 formation of, from glucose and sucrose, A., 1273.
 from glucose by moulds, A., 662.
 manufacture of, for shortening, (P.), B., 365.
 German crops for, B., 1157.
 cleaning of filter-cloths and plant in, B., 30.
 extraction of, from animal and vegetable materials, (P.), B., 1150.
 by dry-rendering, (P.), B., 68.
 treatment of, (P.), B., 263.
 purification of, by fractional distillation, A., 1350.
 refining of, with recovery of solvents, (P.), B., 774.
 filter-cloths for, B., 1135.
 damage of, B., 30.
 bleaching of, B., 958.
 decolourisation of, B., 158.
 adsorbent for, (P.), B., 277.
 hardening of, B., 415.
 kneading machines for, (P.), B., 509.
 improvement of, B., 508.
 Swift apparatus for testing stability of, B., 813, 1053.
 irradiation of, B., 558.
 with ultra-violet light, B., 1054.
 effect of purity on electrical resistance of, B., 596.
 determination of m.p. of, B., 416.
 emulsions of. See under Emulsions.
 coalescence of particles of, A., 1005.
 esterification of, B., 1149.
 hydro-cracking of, B., 158.
 influence of carbon monoxide on hydrogenation of, B., 415.
 effect of hydrogen impurities on hydrogenation of, with nickel formate, B., 416.
 rate of formation of saturated glycerides in hydrogenation of, B., 1053.
 oxidation-reduction potential in hydrolysis of, A., 585.
 susceptibilities of, to oxidation, B., 158.
 antioxidants and autoxidation of, B., 68, 731.
 antioxidant action of vegetable lecithin on, B., 596.
 rate of saponification of, and determination of saponification values, B., 731.
 saponification curve of, in alcoholic solution, B., 858.
 determination of saponification value of, B., 509.
 splitting and oxidation of, A., 1163.
 properties and uses of, B., 275.
 production of fatty acids from, (P.), B., 417.
 ketone formation in, B., 416.
 lipochromes of, A., 1397.
 vitamins in, B., 732.
 refinement of vitamin concentrates from, (P.), B., 1150.
 electrolytic removal of, B., 773.
 removal of, from meat, fish, etc., (P.), B., 959.
- Fat or Fats, putrefaction and biological degradation of, B., 1101.
 spoilage of, B., 363.
 autoxidative spoilage of, B., 364.
 effects of light on rancidity of, B., 1101.
 determination of rancidity of, colorimetrically, B., 1003.
 rancidity and preservation of, B., 596.
 preservation of, (P.), B., 109, 1150.
 "deterioration value" of, B., 364.
 characterisation of, from their polarity, B., 911.
 microscopy of, B., 129.
 organisms in, and their relation to rancidity, B., 858.
 air-blowing accelerated test for, B., 912.
 determination of unsaturation of, by Kaufmann's thiocyanogen method, B., 683.
 effect of air, light, and plant enzymes on, B., 859.
 biochemical aspects of, A., 772.
 accumulation of, in bottom yeast, A., 1165.
 tolerance of, A., 390.
 digestibility and palatability of, in relation to structure, B., 596.
 value of carbohydrates and, in utilisation of proteins, A., 1015.
 absorption of, as index of liver function, A., 1015.
 effect of adrenal extirpation on, A., 524, 1031.
 inhibition by phloridzin of, A., 524.
 absorption and nutritive value of, A., 653.
 effect of, on gastric motility, A., 1407.
 metabolism of. See under Metabolism.
 vitamin-B-sparing action of, A., 544.
 sparing action of, on vitamin-B₁ and -B₂, A., 130.
 specific dynamic effect of, in diet of albino rats, A., 651.
 animal and vegetable, refining of, (P.), B., 417, 561.
 crude, extraction of, by Ban's method, B., 415.
 deep-frying, production of, (P.), B., 1003.
 edible, production of, (P.), B., 597.
 stabilisation of, (P.), B., 1102.
 exogenous, excretion of, through intestinal mucosa, A., 1152.
 in foods, emulsifiability of, B., 731.
 hydrogenated, detection in, of nickel, B., 508.
 human, pigments of, A., 1523.
 Indian, oleic and linoleic acid contents of, B., 68.
 of invertebrate animals, properties of, B., 68.
 pig's, influence of rape oil on iodine value of, B., 172.
 solid, and their mixtures, titre of, B., 683.
 of subcutaneous connective tissues in man, A., 1264.
 synthetic, A., 960; B., 859.
 digestion of, A., 114.
 vegetable, acids of uneven number of carbon atoms in, A., 1435, 1550.
 detection of, in animal fats, by micro-phytosteryl acetate test, B., 596.
 colour standards for, B., 68.
 determination of acetyl value of, B., 1002.
 potentiometric determination of iodine value of, B., 683.
 determination of Hübl iodine value of, B., 1150.
 sterol iodine values of, B., 464.
 detection in, of dimethyl diketone, B., 858.

- Fat or Fats**, determination of, in casein, B., 1161.
 in checco, B., 426, 874.
 in faeces, A., 235.
 in foods, B., 1019.
 in ice cream, B., 1161.
 at stages of lactation, A., 106.
 in milk, B., 873, 1161.
 in oil seeds, refractometrically, B., 317.
 determination of, of unsaponifiable matter, B., 1002.
- Fat tissues**, isolated, metabolism in, A., 1408.
- Fatty materials**, dry-rendering of, (P.), B., 68.
 enzymic oxidation of, (P.), B., 365.
- Feathers**, dyeing of. See under Dyeing.
- Feeding-stuffs**, (P.), B., 252.
 manufacture of, (P.), B., 827.
 from wood, B., 648.
 loft- and frame-drying of, B., 605.
 examination of, microscopically, after chloroform treatment, B., 876.
 influence of manuring on, B., 567.
 use of slaughterhouse blood as, B., 522.
 canning-factory silage as, B., 251.
 carotene content and vitamin-*E* value of, B., 78.
 carotene and vitamin-*C* in, B., 1061.
 cellulose of, B., 428.
 use of citrus wastes for, B., 1162.
 cod-liver oil as, B., 476, 699.
 neutralisation of acids by crops used as, B., 922.
 dairy by-products as, B., 332.
 crude fibre in, B., 1162.
 fish meal as, B., 699.
 effect of fertilisers on iodine content of, B., 1061.
 comparative value of ensilaged grass and mangolds and hay as, B., 781.
 deficiency of magnesium in, A., 114.
 meal from locusts as, B., 428.
 mineral assimilation from, B., 251.
 mineral content of crops for, B., 867.
 Minnesota lake vegetation as, B., 172.
 Russian nettles as, B., 1061.
Poa bulbosa as, B., 971.
 plants of Cameron Highlands for, B., 1162.
 effect of grinding in power mills on protein content of, B., 553.
 biological value of proteins in, B., 572.
 sugar-cane molasses as, B., 44.
 hydrolysis products of wood as, B., 971.
 influence of potassium salts on mildew-resistance of crops for, B., 1060.
 effects of poisons in, on livestock, B., 522.
 A.I.V., trials with, B., 971.
 containing calcium, disease caused by, A., 382.
 castor and groundnut cakes, nitrogen in, B., 471.
 German, mineral content of, B., 285.
 green, preservation of, (P.), B., 286, 782.
 ensilage of, using acid, B., 922.
 determination in, of water, B., 428, 1021.
 grown with and without artificial fertilisers, effect of, in diet, A., 242.
 mixed, determination in, of lactose, B., 522.
 of pigs, physin content of, A., 1175.
 protein, production of, on farms, B., 522.
 of Queensland, B., 1157.
 silage, influence of, on nitrogen and mineral metabolism, B., 922.
 tropical, growth, yield, and composition of, B., 867.
 vegetable, toxic substance occurring in, A., 637.
- Feeding-stuffs**, wheat, fibre content of, B., 77.
 analysis and determination of digestibility of, B., 572.
 determination of "sand" in, B., 875.
 determination in, of sulphur, B., 1018.
Fehling's solution, reduction of, by aromatic aldehydes, A., 1497.
- Felspar**, equilibrium of formation of, and its weathering to kaolin, A., 934.
 effect of heat on inner structure of, B., 901.
 effect of heat treatment on systems of kaolin, quartz, and, B., 901.
 artificial transformation of, into pyrophyllite, A., 1101.
 action of sodium chloride on alumina, ferric oxide, silica, kaolin, salt glaze, and, B., 187.
 use of, in chemical industry, B., 61.
 availability to plants of potassium in, B., 820.
 sodium-potassium, dispersion of, A., 19.
 analysis of, B., 451.
 determination in, of alkalis, A., 1338.
- Felt**, manufacture of, (P.), B., 897.
 impregnation of, with bitumen, (P.), B., 351.
 pressed, finishing of, B., 897.
 water-laid, manufacture of, (P.), B., 1139.
- Femur of horse**, composition of, A., 377.
- Fenchene series**, phenyl azide reaction in, A., 349.
- dl*-Fenchol**, isolation of, from American pine oil, and its derivatives, A., 349.
- Fenchone**, derivatives of, from reaction with dimagnesium derivative of acetylone, A., 349.
- iso*Fenchone anil**, reaction of, with phenyl azide, A., 350.
- Fenchyl alcohol**, methylsanteno compounds derived from, A., 755.
- Fennel**, oil content of, B., 1068.
- Fermentation**, (P.), B., 376.
 Semichon process of, B., 474.
 apparatus for, B., 744; (P.), B., 42.
 chemistry of, B., 603.
 stimulation by irradiation in, (P.), B., 121.
 oxidation-reduction potential in, B., 823.
 nitrogenous nutrition of micro-organisms in, (P.), B., 377.
 by zymase, A., 1164.
 production of organic acids by, B., 520.
 potential of formation of reducing substances during, A., 253.
 acetic, A., 1029.
 acetone-butyl alcohol, A., 1541; B., 120, 696, 1016.
 influence of solvents on, B., 872.
 in sugar media, A., 788.
 alcoholic, chemistry of, B., 650, 1015.
 velocity of, A., 534.
 ion antagonism and activation in, A., 123.
 phosphorylation in, A., 1026.
 reactions in, A., 1538.
 action of organic substances on, A., 1539.
 of sugar-containing materials, (P.), B., 203.
- butyric**, A., 1167.
 effect of carbon monoxide on, A., 125.
 citric, A., 124, 407, 662; B., 424.
 gluconic, A., 1166.
 lactic, activator of, A., 255.
 propionic, intermediate products of, B., 424.
 yeast. See under Yeast.
- Fermi effect**, A., 141.
 and energy of neutrons, A., 1296.
- Ferriocyanides**, detection of, A., 838.
 in presence of ferrocyanides, A., 1095.
- Ferrisorbon**, A., 1526.
- Ferrite**, veining of, B., 189.
 in malleable cast iron, B., 1046.
- Ferrites**. See under Iron.
- Ferrocromium**, production of, (P.), B., 155.
 chromium oxide inclusions in, B., 190.
 determination in, of soluble and insoluble nitrogen, B., 64.
- Ferrocobalt**, manufacture of, (P.), B., 156, 314.
- Ferrocyanides**, oxidation of, by X-rays, A., 1469.
 thermal changes in precipitation of, A., 37.
 intermediate compounds between ferrominnes and, A., 181.
 complex, fission of, by bacteria, A., 536.
 determination of, with dichromate, A., 597.
- Ferromagnetic alloys**. See under Alloys.
 compounds, gyromagnetic effect of, A., 922.
 materials, magnetisation function for, A., 19.
 mechanical damping of, in magnetisation, A., 1063.
 magneto-resistance and magnetic structure of, A., 18.
 discontinuity of magneto-resistance in, A., 287.
 anisotropy of, A., 1058.
 magnetic detection of flaws in, B., 905.
- metals**. See under Metals.
- permeability as function of electrical tension, A., 813.
 plates, energetic and magnetic anisotropy in, in magnetic fields, A., 435.
 powders, magnetic susceptibility of, A., 1197.
 thermomagnetism of, A., 1063.
 substances, anomalous electrical resistance of, A., 1062.
 magnetism of, when field is cut off, A., 573.
 effect of magnetic field and temperature on thermo-electric properties of, A., 1196.
 effect of magnetisation on Young's modulus of, A., 1311.
 vectorial properties of, A., 19.
 transformation, and catalytic activity, A., 153.
- Ferromagnetism**, theory of, A., 435.
 modified Heisenberg theory of, A., 1452.
 with small changes of field, A., 149, 1196.
 distribution of, among metals, A., 1309.
- Ferromanganese**, slag from manufacture of, B., 1144.
- Ferrosorbon**, A., 1526.
- Ferrosilicon**, occurrence of, A., 1347.
 recovery of, from roasted pyrites, B., 27.
 production of alloys of niobium and, (P.), B., 1147.
- Ferrosilid**, welding and coating with, B., 1050.
- Ferrotitanium**, manufacture of, (P.), B., 273.
- Ferrotungsten**, reduced ferberite as substitute for, B., 103.
- Fertilisers**, B., 324; (P.), B., 248, 283, 517, 568.
 manufacture of, (P.), B., 118, 168, 282, 423, 517, 568, 919, 1062.
 from ammonium sulphate, (P.), B., 543.
 from brown coal, B., 612.
 from carbonaceous materials, (P.), B., 248.
 from human faeces and garbage, B., 1120.
 from offals, B., 522.

Fertilisers, manufacture of, from peat, (P.), B., 517.
 from sewage sludge, (P.), B., 375.
 from sunflower stems, B., 801.
 and ammonium phosphate, (P.), B., 672.
 production of salts for, (P.), B., 1092.
 physiology of application of, B., 1010.
 ammonia as, B., 422.
 blast-furnace slag as, B., 639.
 brown coal as, B., 325, 1109.
 coconut husk ash as, B., 471.
 felspar as, B., 820.
 use of gypsum, phosphogypsum, and lime residues as, B., 689.
 iron and aluminium phosphates as, B., 866.
 oxidising agents as, B., 37.
 nutrient value of phosphorus in calcined phosphates used as, B., 966.
 use of sewage sludge as, B., 1071.
 Westphalian coal ash as, B., 165.
 treatment of, for application by scattering, (P.), B., 39.
 chemistry of, B., 325.
 effect of boron in, B., 244.
 use of copper sulphate in, B., 116.
 use of ground phosphate rock as filler in, B., 116.
 conversion of scrap leather into, (P.), B., 371.
 mixing of liming materials with, B., 866.
 transformation of phosphates in, by dolomite and limestone, B., 165.
 effect of rarer elements in, on plant growth, B., 1109.
 relative effects of sodium and potassium in, B., 966, 967.
 response of crops to, B., 282.
 influence of, on soil reaction, B., 866.
 for orchards, B., 1157.
 action of, on fish, B., 691.
 effect of, on iodine content of feeding-stuffs, B., 1061.
 combined insecticides and, (P.), B., 869.
 "effect factor" of, B., 646.
 ammonia-nitrate, production of, from gypsum, B., 116.
 calcium cyanamide, B., 325.
 calcium phosphate, Thomas slag and, B., 422.
 citrate-soluble phosphate, production of, (P.), B., 1142.
 high-chlorine, influence of, on crops, B., 867.
 humic, B., 324.
 huminic, B., 165.
 inorganic, comparative efficiency of farm-yard manure and, B., 37.
 magnesium, B., 967.
 mixed, (P.), B., 248.
 production of, (P.), B., 168.
 mixtures of calcium cyanamide and superphosphates as, B., 866.
 loss of water-soluble potash in, B., 1060.
 non-acid-forming, B., 1108.
 containing lime, manufacture of, (P.), B., 778.
 determination in, of available potash, B., 741.
 of potassium, B., 866.
 nitrogenous, manufacture of, (P.), B., 200.
 and magnesia, from dolomite, (P.), B., 672.
 from urea-ammoniated peat, B., 602.
 application of, B., 1060.
 effect of, on p_H of soils, B., 73.
 non-caking, production of, (P.), B., 517.

Fertilisers, organic, solubilisation of phosphates in, B., 866.
 organo-mineral, efficiency of, B., 1157.
 phosphate, production of, (P.), B., 517.
 apparatus for, (P.), B., 919.
 by calcination, B., 601.
 in Germany, B., 20.
 meta- and pyro-phosphates as, B., 966.
 luminescence of, B., 165.
 distribution and action of, B., 602.
 efficiency and distribution of, in soils, B., 866.
 behaviour of, in soils, B., 602.
 solubility of phosphoric acid of, B., 821.
 intake of, by plants, B., 867.
 mixed, manufacture of, (P.), B., 327.
 soluble, production of, (P.), B., 168.
 analysis of, B., 198.
 potash, production of, in America, B., 671.
 effect of distribution of, on their action in pot cultures, B., 966.
 effect of iron salts on availability of, B., 966.
 influence of magnesium and sodium on action of, B., 966.
 potassium, effect of secondary salts in, B., 688.
 use of sodium nitrate and ammonium sulphate with, B., 966.
 of Queensland, B., 1157.
 determination in, of boric acid, B., 820.
 of citrate-insoluble phosphate, B., 741.
 of potash, B., 515.
 of potassium, B., 966.
Fever, substances causing, A., 394.
 chemical changes in blood, liver, and muscle in, A., 117.
 lipins in blood-leucocytes in cases of, A., 1009.
 creatine and phosphorus metabolism in, A., 886.
 excretion of creatine substances in, A., 886.
 creatinine clearance during, A., 1401.
 experimental, creatinuria in, A., 395.
 influence of spleen in, A., 1159.
 induced, action of, on lachrymal elimination of sodium chloride, A., 394.
Fibres, X-ray and electron analysis of, A., 162.
 microscopy of transverse sections of, B., 298.
 dark-field microscopic study of, B., 15.
 production of, from flax, etc., (P.), B., 669.
 German crops for, B., 1157.
 from waste paper, (P.), B., 1139.
 internal structure and mechanical properties of, B., 1135.
 electrokinetic potentials between water and, A., 698.
 effect of atmospheric humidity on length of, B., 183.
 hydration of, B., 183.
 printing of. See under Printing.
 preparation of candles of, for microscopical examination, B., 666.
 prevention of mould-stains on, B., 1135.
 animal, manufacture of, (P.), B., 300.
 treatment of, (P.), B., 916.
 mothproofing of, (P.), B., 267.
 action of hypertonic solutions on crystal structure of, A., 1021.
 production of shrinkage effects on fabrics of, (P.), B., 766.
 manufacture of bands, threads, etc., from, (P.), B., 58.
 artificial, manufacture of, (P.), B., 668.

Fibres, artificial, sizing of, (P.), B., 627.
 wool-like, manufacture of, (P.), B., 351, 1138.
 bast, purification of, (P.), B., 350, 1040.
 crimped, production of, (P.), B., 447.
 decorticated, degumming of, (P.), B., 350.
 dyed, dichroism and micellar arrangement of, B., 988.
 felted, manufacture of absorbent water-laid webs of, (P.), B., 1089.
 jute. See Jute fibres.
 natural and artificial, treatment of, (P.), B., 943.
 wet and dry tensile strengths of, B., 445.
 nitrogenous, production of anilino black on, B., 94.
 paper. See Paper fibres.
 staple, manufacture of, (P.), B., 17, 96, 1138.
 artificial, manufacture of, (P.), B., 300, 663, 1040.
 textile, apparatus for treatment of, with liquids, (P.), B., 626.
 lubrication of, B., 718; (P.), B., 801.
 lustring of, preparatory to spinning, (P.), B., 946.
 sizing of, (P.), B., 186.
 fluorescence of, B., 623.
 artificial cellulose for, B., 350.
 titer control of, B., 398.
 X-ray analysis of, A., 1308, B., 220.
 analysis of mixtures of, B., 986.
 vegetable, transverse subdivision of, B., 844.
 hydration of, during beating, B., 1039.
 degumming of, for spinning, (P.), B., 943.
 treatment of, for spinning, (P.), B., 265.
 mordanting of, B., 625.
 light-fastness of dyes on, B., 945.
 X-ray study of effect of removing non-cellulosic constituents from, A., 1451.
 action of aliphatic compounds on, B., 301.
 Brazilian, for paper-making, B., 1136.
 vulcanised, parchmentising and properties of, B., 1040.
 wood. See Wood fibres.
 wool. See Wool fibres.
 stains for identification of, B., 489.
 accuracy of analysis of, B., 797.
Fibre board, manufacture of, (P.), B., 541.
 bonded with synthetic resins, for electrical purposes, B., 466.
 building, testing of, B., 1039.
 composite, manufacture of, (P.), B., 669.
 waterproof, manufacture of, (P.), B., 97.
Fibre products, insecticide and fungicide for, (P.), B., 448.
Fibrin, formation of, from fibrinogen and thrombin, A., 771.
 plasma-, determination of, A., 1394.
Fibrinogen, effect of p_H and thromboso on coagulation of, A., 165, 1262.
 effect of nucleic acid on coagulation of, A., 375.
 determination of, A., 104.
Fibroblasts, influence of arsenic compounds on growth of, A., 392, 1412.
 influence of metallic couples on, A., 1012.
 influence of sodium salts on growth of, A., 392.
 influence of sugars on growth of, A., 392.
 human, growth of, in media containing copper, A., 392.
 in media containing silver, A., 1021.

- Fibroin**, isoelectric point of, A., 1398.
silk. See Silk fibroin.
- Fibrous materials**, recovery of, (P.), B., 720.
treatment of, (P.), B., 19, 987.
digesters for, (P.), B., 96.
digestion of, (P.), B., 896.
drying of, (P.), B., 531.
fireproofing of, B., 806.
fireproofing and waterproofing of, (P.), B., 848.
apparatus for grinding, refining, etc., of, (P.), B., 301.
impregnation of, (P.), B., 624.
with synthetic resins, (P.), B., 450.
with rubber solutions, (P.), B., 371.
oil-proofing of, (P.), B., 511.
pulp of, (P.), B., 96, 624.
waterproofing of, (P.), B., 401, 450.
waterproof size for, (P.), B., 186.
absorption of moisture by, B., 586.
decomposition of arsine by, A., 181.
utilisation of, (P.), B., 721.
production of laminated articles from, (P.), B., 111.
animal, vegetable, and artificial, treatment of, (P.), B., 627.
constructional, inflammability of, B., 592.
fireproof, manufacture of, (P.), B., 670.
laminated, production of, (P.), B., 1103.
moisture-resistant, manufacture of, (P.), B., 223.
porous, manufacture of, (P.), B., 98.
rubber-impregnated, manufacture of, (P.), B., 1041.
sheet, manufacture of, (P.), B., 1089.
vegetable, treatment of, for mercerisation, (P.), B., 989.
sizing of, (P.), B., 943.
- Ficaria verna*, assimilation and growth of, A., 548.
- Fichtelite**, constitution of, A., 741.
- Ficus carica*. See Fig trees.
- Ficus glabrata*. See Fig trees.
- Figs**, vitamins in, B., 572.
- Figs trees**, proteases of, A., 1025.
proteolytic enzymes from latex of, A., 1417.
- Fig-seed oil**, constants of, B., 859.
caprified, B., 640.
- Filaments**, treatment of, (P.), B., 400, 799.
antistatic dressing for, (P.), B., 943.
plastic colloidal tungsten compounds for, (P.), B., 900.
artificial, manufacture of, B., 844; (P.), B., 17, 96, 300, 448, 491, 541, 588, 668, 720, 799, 944, 1040.
from cellulose derivatives, (P.), B., 987.
manufacture and stretching of, (P.), B., 300.
treatment of, (P.), B., 1040.
spinning of, (P.), B., 223.
filter for, (P.), B., 800.
coloured, manufacture of, (P.), B., 626.
dull-lustre, manufacture of, (P.), B., 668.
fast-coloured, spinning of, (P.), B., 144.
matt, manufacture of, (P.), B., 96.
crimped, production of, (P.), B., 447.
metal, kinetics of oxidation with, A., 1466.
oxide-coated, electron diffraction on, A., 287.
textile, determination of degree of lubrication of, (P.), B., 18.
untwisted viscose, manufacture of, (P.), B., 1138.
- Films**, Pockels, Langmuir, and Adam theory of, A., 29.
manufacture of, (P.), B., 668.
- Films**, carrier supports for, (P.), B., 930.
compositions for, from chlorinated rubber, (P.), B., 735.
on glass, depolarisation of light by, A., 1054.
X-ray and electron analysis of, A., 162.
adsorbed, discontinuities in, A., 929.
artificial, production of, from seaweed, etc., (P.), B., 185.
conducting, in high vacua, A., 1340.
non-metallic, A., 1340.
liquid, viscous flow of, A., 1201.
molecular, spreading in, applied to biology, A., 270.
surface, structure of, A., 161.
thin, thermo-electric force of, A., 154.
transparent, manufacture of, (P.), B., 266, 668, 987.
unimolecular layer, on solids, A., 931.
- Filters**, (P.), B., 50, 51, 387, 434, 532, 658, 787, 788, 834, 882, 930, 1026, 1075.
sterilisation of, (P.), B., 290.
diatomaceous earth for use in, (P.), B., 1025.
manufacture of elements for, (P.), B., 84.
media for, (P.), B., 4.
pads for, (P.), B., 4, 435, 755*.
sieves for, (P.), B., 3, 257.
sintered glass plates for, A., 467.
nature of flow of liquids through septa of, B., 753.
revivification of materials in, (P.), B., 4, 930.
for aerosols, (P.), B., 930.
for gases, (P.), B., 611, 978.
for gases and liquids, (P.), B., 787.
continuous, performance of, A., 1342.
self-cleaning, (P.), B., 481.
electro-. See Electro-filters.
- felt**, (P.), B., 434.
- glass**, A., 189.
manufacture of, (P.), B., 307.
light. See Light filters.
- pack**, (P.), B., 787.
- percolating**, phosphorus requirements of, A., 255.
- pressure**, (P.), B., 481.
- rotary**, (P.), B., 50.
drum, (P.), B., 706.
multiplex, (P.), B., 387.
sand, cleaning of, (P.), B., 930.
filtering materials for, B., 704.
- vacuum**, (P.), B., 787.
for drop analysis, A., 952.
continuous, (P.), B., 3.
- Filter cakes**, formation and discharging of, (P.), B., 788.
control of thickness of, (P.), B., 387.
- Filter presses**, (P.), B., 290, 387, 481, 754, 787.
pumps for, (P.), B., 51.
- Filtration**, B., 753; (P.), B., 834, 882.
laws of, B., 881.
rapid method of, B., 385.
funnels for, (P.), B., 788.
materials for, (P.), B., 434.
washing in, B., 82.
derivation of general equations for, B., 705.
of liquids, (P.), B., 84, 435.
of viscous liquids, A., 59.
of hot solutions, A., 840.
- Filtration apparatus**, (P.), B., 84, 290, 434, 600, 658, 787.
stopper for, (P.), B., 1078.
with avoidance of evaporation, A., 723.
micro-, A., 1477.
- Finger-and-toe disease**. See *Plasmodiophora brassicae*.
- Finger-prints**, bloody, indistinct, method of making visible, A., 999.
- Fir**, Douglas, lignin in, B., 16.
- Fir needles**, effect of canning on vitamin-C activity of, A., 1287.
- Fire**, prevention of, B., 705.
risks of, in rubber industry, B., 1058.
prevention and control of, in varnish factories, B., 239.
- Firebricks**, plastic refractories for, (P.), B., 993.
- Fireclay**, manufacture of, B., 851.
effect of iron oxide in burning of, B., 101, 768.
influence of firing on permeability to air of, B., 188.
action of carbon monoxide on, B., 496.
effect of sodium aluminate in sewer-pipes of, B., 901.
- Ayrshire**, boehmite and diasporite in, A., 323.
- granular, open and closed pores in, B., 406.
- Pennsylvania**, utilisation of, B., 271.
plastic, effect of fused alumina and boron oxide on, B., 768.
- Firedamp**. See Methane.
- Fire-extinguishers**, (P.), B., 1074.
fillings for, B., 433.
foam for, (P.), B., 2, 482, 659.
foam producers for, (P.), B., 434.
air-foam for, (P.), B., 579.
foam, prevention of corrosion of containers of, (P.), B., 315.
- Fireproofing**, compositions for, (P.), B., 848, 948.
antiseptic compositions for, (P.), B., 497.
material for, (P.), B., 806.
of cellulose materials, (P.), B., 304.
of electric cables, (P.), B., 812.
of fibrous materials, B., 806; (P.), B., 670.
of rubber, B., 737; (P.), B., 114, 962.
of textiles, B., 492.
of wood, B., 632, 727.
of wooden building materials, B., 308; (P.), B., 309.
of ships' woodwork, etc., B., 102.
- Fireproofing agents**, for wood, etc., (P.), B., 951.
- Firing**, calculations on, B., 289, 833.
technical, calculations on, B., 209.
- ψ*-**Fisetinidin pentacetates**, A., 867.
- Fish**, effect of homotypic conditioning of water on growth of, A., 525.
arsenic in, from polluted water, B., 875.
relation between ossification of skeleton and blood-calcium in, A., 231.
carotenoids in, A., 1151.
fat of, A., 242.
fat metabolism in, A., 1151.
toxicity of hydrocarbons in river water to, B., 1072.
fixation of potassium by, A., 1523.
recovery of oil and press-cake from, (P.), B., 319.
use of entrails from, in softening and unhairing substances, B., 114.
as source of petroleum, A., 600.
biochemical changes in, during storage, B., 747.
preservation of, (P.), B., 123, 876, 1022.
for analysis, B., 1116.
effect of fat content on preserving qualities of, B., 698.
action of fertilisers on, B., 691.
effect of pulp and paper mill wastes on, B., 928.
treatment of sewage and poisoning of, B., 576.

- Fish**, canned, tin and lead in, B., 1115.
 fresh and thawed, preservation of, in ice, B., 475.
 fresh-water, effect of electric current on branchial permeability of, A., 1276.
 extraction of oxygen by, at varying p_{H_2} , A., 238.
 pond, rôle of fertilisers in culture of, B., 248.
 preserved, formaldehyde in, B., 698.
 red fungus on, B., 652.
 detection of hexamethylenetetramine in, B., 427.
 tropical fresh-water, respiration of, A., 371.
 white, degree of staleness of, B., 427.
Fish liver. See under **Liver**.
Fish-liver oils, absorption spectra of acids from, A., 647.
 astacene from, A., 882.
 toxic components of, A., 233.
 unsaponifiable matter of, B., 912.
 vitamin-D in, A., 417.
 Indian, determination in, of vitamin-A, A., 1428.
 analytical classification of, B., 194.
Fish meal, feeding-stuffs from, B., 699.
 effect of method of manufacture on nutrient value of, B., 172.
 determination of digestibility of proteins in, B., 698.
 feeding of pigs with, B., 379, 922.
 rich-in-fat, digestibility of, B., 172.
Fish offal, drying of, (P.), B., 477.
Fish oils, manufacture and uses of, B., 641.
 varieties of, and their uses, B., 509.
 blending of, for medicinal use, B., 1163.
 effect of cooking and drying on, B., 464.
 deodorisation of, B., 109.
 partial hydrogenation of, B., 859, 912.
 formation of resinous specks on vegetable-tanned leather by, B., 469.
 effect of ingestion of, on blood and milk of lactating cows, A., 773.
 edible hardened, production of, B., 912.
 hydrogenated, fractional distillation of saturated fatty acids of, B., 1053.
 identification of, B., 560.
 mixed, analysis of, B., 416.
 polymerised, effect of refining on properties of, B., 560.
 detection of, B., 68.
Fish pastes, B., 378.
 composition of, B., 378.
Fish poisons, vegetable, of Mysore, insecticidal properties of, B., 118.
Fishing nets. See under **Nets**.
Fixatives, osmotic pressure of, A., 883.
Fixapret-B, use of, in fast-to-washing fillings for fabrics, B., 353.
Flabellula mira, nutrition of, A., 1013.
Flame, history of definition of, A., 840.
 continuous spectra of, A., 272.
 spectra and latent energy in gases in, A., 138, 461.
 temperatures of, A., 598, 1080.
 measurement of temperature of, by sodium line-reversal method, A., 465.
 rôle of charged particles in propagation of, A., 39.
 velocity of, in gas mixtures, B., 258.
 in mixtures of inflammable gases, B., 53.
 movements of, in gaseous explosions, A., 1463.
 luminous, production of, in furnaces, (P.), B., 893.
Flame tests, test-tube method for, A., 1093.
Flashlights, determination of colour temperature of, A., 1468.
Flasks, glass-blowers' holder for, A., 321.
 sulphonation, A., 639.
 titration, for colour changes, A., 599.
Flavanones, and their oxidation to flavones, A., 1129.
Flavanthrone dyes, vat, manufacture of, (P.), B., 797.
Flavene, 4':3:2:7-tetrahydroxy-, tetra-acetyl derivative, A., 867.
Flavonic acid, salts, identification of, A., 639.
 amino-acid salts, microscopy of, A., 1516.
Flavins, A., 1134.
 synthesis of, A., 359, 631, 760, 993, 1134, 1510.
 constitution and biological activity of, A., 993.
 degradation of, by light, A., 631, 760, 1510.
 photodynamic action of, on ascorbic acid, A., 670.
 in white wines, B., 203.
 content of, in yeast, A., 1165.
 transformation of, by bacteria, A., 255.
 of animal tissues, A., 233.
 balance of, in animals, A., 903.
 growth effect of, on chicks, A., 1545.
 content of, in liver and muscle, A., 669.
 animal, fluorescence spectra of, A., 771.
 synthetic, fluorescence curves of, A., 1134.
 growth-promoting action of, A., 1175.
Flavinduline hydrobromide, hydrochloride, and hydriodide, B., 586.
Flavinphosphoric acid, irradiation of, A., 1277.
 from liver, A., 1521.
Flavone, and its derivatives, mutual solubility of, A., 817.
Flavone, 5:6-dihydroxy-, attempted synthesis of, A., 220.
Flavones, formation of, from chalkones and flavanones, A., 1129.
Flavonol, synthesis of, A., 1128.
Flavophen, and 2:5:7:8:10:13-hexanitro-, A., 1378.
Flavoproteins, in enzymic dehydration, A., 130.
Flavourings, standards for, B., 251.
 classification of, B., 1165.
 for foods, (P.), B., 173.
 decolorised, production of, (P.), B., 748.
 vegetable, production of, (P.), B., 653.
Flavopinacols, synthetic, absorption spectra of, A., 218.
Flavylium chloride, *mono*-, *di*-, and *tri*-hydroxy-derivatives, A., 1129.
 4':3:7-trihydroxy-, A., 867.
 salts, structure of, A., 1247.
Flax, mixed crops of hemp, oats, and, B., 166.
 effect of calcium cyanamide on growth of, B., 918.
 hydrolysis of phytin compounds from seeds of, A., 134.
 wilt of, A., 554.
 bleaching and catalysis defects of, B., 844.
 production of fibres from, (P.), B., 669.
 use of pulp from, in rag paper, B., 222.
Flax straw, seed, pulping of, B., 667.
Flax yarns, absorption of water by, B., 350.
 dry-spun, boiling of, B., 843.
Flea-beetles. See under **Beetles**.
Flies, blow-, fat-soluble growth factor for larvæ of, A., 889, 1287.
 growth of larvæ of, on blood and serum, A., 889.
 bulb, Bordeaux-oil sprays for control of, B., 248.
Flies, ox warble, control of, B., 118.
 timothy-grass. See *Emaurosoma armillatum*.
 trickling-filter. See *Psychoda alternata*.
 white, resin sprays for control of, B., 517.
Flint, micro-diaclases in, A., 726.
Flocculation, effect of temperature and adsorption on reactions of, A., 882.
Floors, binding material for surfaces of, (P.), B., 675.
 coverings for, (P.), B., 1005.
 from oil gels, (P.), B., 735.
 rubber, (P.), B., 1105.
 rubber materials for, (P.), B., 150.
 from chlorinated rubber, (P.), B., 368.
 fireproof rubber for, B., 737.
 stone-wood masses for, (P.), B., 632.
 tiles for. See under **Tiles**.
 wax polishes for, B., 365.
 waterproof composition for, (P.), B., 1144.
 concrete, protective and decorative coatings on, B., 32.
 of magnesium cement, manufacture of, (P.), B., 632.
 waterproof, manufacture of, (P.), B., 806.
Flores verbasci. See **Mullen**.
Florideæ, starch of, A., 133.
Floridin, isomerisation of allene hydrocarbons by, A., 957.
Flotation, A., 1071; B., 501.
 theory of, A., 931, 1201, 1317; B., 25.
 apparatus for, (P.), B., 658, 1075.
 agents for, B., 312, 595; (P.), B., 908.
 mechanism of, A., 820, 1201.
 physical chemistry of, A., 1458; B., 671.
 electrostatic potential and, A., 293.
 concentration by, B., 856.
 with water-insoluble reagents, A., 578; B., 809.
 of ores, (P.), B., 29.
 agents for, (P.), B., 106.
 of ores and minerals, (P.), B., 193.
 froth, (P.), B., 506, 1147.
Flour (wheat flour), production of, (P.), B., 252, 748.
 from beans, (P.), B., 285.
 refining and nutritive value of, B., 570.
 treatment of, to improve its baking properties, (P.), B., 572.
 physiological action of agents used in, A., 529.
 bleaching of, B., 1018.
 bleaching agent for, (P.), B., 286.
 blending of, B., 377.
 temperature in 130° C. ovens for drying of, B., 426.
 time of mixing of, from different wheats, B., 651.
 determination of particle size of, by sedimentation, B., 170.
 oxidation-reduction potentials of, B., 872.
 viscosity of, B., 1114.
 use of Brabender farinograph as measure of rate of water absorption of, B., 1114.
 significance of moisture in, B., 520.
 degree of acidity of, B., 426.
 acidity factor of flour fat and age of, B., 520.
 amino-acid content of dough from, A., 1418.
 ashing of, B., 697.
 calculation of ash of, B., 697.
 determination of ash of extracts of, from electrical conductivity, B., 698.
 carbohydrate content of wheat grains and, B., 121.
 catalase activity in, B., 650.

- Flour**, determination of diastatic activity of, by Blish and Sandstedt and modified Rumsy methods, B., 1017.
by ferricyanide method, B., 1114.
action of enzymes in, B., 921.
fat of, B., 746.
gas production from, B., 514.
determination of gassing power of, B., 651, 1114.
synthesis of gluten in, B., 377.
influence of free surface on gluten and gassing properties of, B., 520.
nitrogenous matter of wheat and, B., 745.
distribution of phosphorus and of soluble nitrogen in, A., 134.
proteins of. See Proteins, wheat-flour.
soluble matter in dough, bread, and, B., 824.
fermentable sugars of, A., 550; B., 425.
sugars of dough and, B., 746.
conversion of starch in, (P.), B., 871.
baking quality of, B., 746, 1116.
influence of free fatty acids on, B., 520.
relations between granulation and, B., 204.
effect of bromate on, B., 1019.
mill baking test for, B., 1019.
measurement of colour of, with Maxwell discs, B., 425.
determination of rancidity of, B., 203.
reducing power and quality of, B., 475.
tallowiness and acidity of, B., 872.
viscosity test on, B., 170.
penetration of hydrogen cyanide into bags of, B., 121.
manufacture of dry cake mix from, (P.), B., 285.
proteolysis in, B., 330, 520.
ageing of, B., 697.
effect of storage on quality of, B., 1114.
biscuit and cracker, testing of, B., 170, 1114.
cake, (P.), B., 252, 285.
quality of, B., 170.
cake and pastry, differentiation of, by viscosity of their water suspensions, B., 1114.
diastatic, production of, (P.), B., 77.
Italian, diastatic power of, B., 1114.
from meslin, B., 780.
overbleached, treatment of, (P.), B., 252.
phosphated and self-raising, determination of ash content of original flour in, B., 697.
for pils, testing of, B., 651.
rye and wheat, detection of, in mixed flours by trifurcotosan content, B., 872.
self-raising, testing of, B., 651.
ash of flour in, B., 1115.
from wheat grown on grey and black soils of Alberta, B., 1160.
soft wheat, testing of, by cake-baking method, B., 651.
detection of, in rye flour, B., 425.
detection in, of rice, B., 1113.
determination in, of acidity, B., 426.
of artificial ash, B., 377.
of ash, B., 475.
of protein, B., 250.
of starch, B., 40.
of sugars, B., 1113.
determination of starch in by-products from, B., 329.
- Flour beetles**. See Beetles, flour.
- Flour mills**, determination of nitrogen and proteins in products of, B., 330.
- Flowers**, growth-factor for micro-organisms in anthers of, A., 663.
biochemistry of, A., 552.
cut, preserving freshness of, (P.), B., 692.
- Flues**, condensation of moisture in, B., 6.
- Fluids**, mixed, statistical mechanics of, A., 816.
- Fluidity**, logarithmic increase of, A., 1065.
- Fluoboric acid**. See under Fluorine.
- Fluor-amphiboles**, synthetic, A., 1478.
- Fluorene**, A., 74.
derivatives, condensed, A., 1359.
- Fluorene**, 2-nitro-, A., 1488.
- Fluorene series**, A., 1124.
- Fluorene-9-carboxylic acid**, β -butoxyethyl ester, production of, (P.), B., 861.
- Fluorenone**, 3-bromo-, 3-hydroxy-, oxime of, and 3-nitro-, A., 1124.
- Fluorenone-2:7-dicarboxylic acid**, and its derivatives, A., 347.
- α -Fluorenylidene- γ -dimethylbutan- β -one**, A., 476.
- β -Fluorenylidene- δ -methylpentan- γ -one**, A., 476.
- Fluorescein**, duration of luminescence of, A., 681.
decay of fluorescence of, A., 1190.
fluorescence of aqueous solutions of, on anti-Stokes excitation, A., 429.
absorption and polarisation of fluorescence in, A., 565.
- Fluorescein, dichloro-**, use of, as adsorption indicator, A., 835.
- Fluorescence**, measurement of, with a selenium cell, A., 466.
measurement of spectral distribution of intensity of, A., 839.
time decrement of, in dye solutions, A., 915.
decay of, A., 1190.
extinction of, by potassium iodide, A., 915.
in crystallisation, A., 282.
of crystals, A., 147.
in liquids, A., 429.
quenching of, by halogen ions, A., 681.
of pure substances, A., 1054.
- Fluorescent screens**, (P.), B., 508.
for Braun tubes, (P.), B., 812.
substances, for X-ray screens, etc., (P.), B., 495.
- Fluorine**, A., 51.
at. wt. of, A., 425.
atomic wave function of, A., 1187.
occurrence of, in coal, B., 5.
in French mineral waters, A., 190.
production of, electrolytically, B., 802; (P.), B., 544.
spectrum of, A., 1, 423.
vacuum spark spectrum of, A., 675.
induced radioactivity of, A., 1186.
high-speed electrons from, under bombardment by neutrons, A., 7.
disintegration of, by neutrons, A., 277.
reaction of, with hydroxides and water, A., 461.
effect of, in water supplies, B., 608.
on plant growth, B., 1109.
toxicity of, A., 1022.
to dairy cows, A., 781.
effect of diet on, in rats, A., 896.
effect of, on calcium and phosphorus metabolism in albino rats, A., 399.
on blood and respiration in dogs, A., 1021.
in dairy cows, effect of feeding rock phosphate on, A., 243.
in water, effect of, on teeth, A., 399.
in natural waters, effect of, on teeth of small fish, A., 1413.
- Fluorine compounds**, preparation and properties of, A., 715.
insecticidal action of, B., 968.
- Fluorine monoxide**, structure of, A., 687.
electron diffraction structure of, A., 572.
infra-red spectrum of, A., 428, 1300.
reactions of, with water and sodium hydroxide, A., 51.
oxides, physiological action of, A., 1413.
- Hydrofluoric acid**, formula of, A., 945.
manufacture of, B., 451.
liquid, physico-chemical properties of solutions of alcohols, organic acids, and phenols in, A., 582.
specific heat of solutions of, A., 935.
bactericidal activity of disinfectants containing, B., 976.
effect of inhalation of, A., 1534.
- Fluorides**, biological action of, A., 658.
effect of sodium nitrite on toxicity of, A., 1021.
effect of, on blood and respiration, A., 531.
on blood-phosphorus and phosphorus metabolism of rabbits, A., 399.
on serum-calcium and -phosphorus, A., 531.
soluble, determination in, of sulphates, A., 463.
volatile, magnetic behaviour of, A., 436.
detection of, A., 316, 717.
- Fluoboric acid**, complex amines of, A., 946.
- Fluosilicates**, production of, B., 147.
use of, in wines, B., 330.
titration of, A., 1215.
- Fluorine organic compounds**, production of, (P.), B., 618.
purification of, (P.), B., 218.
spectrochemistry of, A., 1056.
- Fluorine detection and determination**:-
detection of, in drinking water, B., 384.
detection and determination of, in natural waters, B., 832.
determination of, A., 1091.
colorimetrically, A., 595.
by Greiff's method, A., 53.
by Willard and Winter's method, in phosphatic materials, B., 493.
in apatites and phosphorites, A., 1336; B., 60.
in biological materials, A., 1552.
in enamels, B., 850.
in phosphorites, B., 723.
in sulphuric acid and oleum, B., 354.
in superphosphate industry, B., 60.
in teeth, A., 234.
in potable water, B., 1024.
determination and toxic concentrations of, in water, A., 316.
- Fluorite (fluorspar)**, separation of, from barite and calcite, B., 104.
infra-red spectrum of, A., 145.
fluorescence of, A., 232.
electron conduction and colour distribution in, A., 915.
colour distribution and crystal structure of, A., 915.
production of cryolite from, B., 451.
effect of, in open-hearth slags, B., 498.
attachment of windows of, to glass apparatus, A., 1342.
- Fluoro-compounds**, aromatic, A., 856.
- Fluoro-phenols**, A., 856.
- Fluorspar**. See Fluorite.
- Fluosilicates**. See under Fluorine.
- Fluxes**, use of barium compounds as, B., 405.
soldering, (P.), B., 362.
removal of, (P.), B., 1051.

- Foam**, generation of, with air, (P.), B., 611.
 stabilisation of, A., 701.
 prevention of, (P.), B., 387.
 composition for, (P.), B., 755.
- Foaming agents**, manufacture of, (P.), B., 59.
- Fodder**. See Feeding-stuffs.
- Foils**, transparent, manufacture of, (P.), B., 266.
- Follicle-juice**, menformone-free, action of, on growth and development, A., 542.
- Folliculin**, synthesis of, in avitaminosis-A, A., 902.
 extraction of, and its activity, A., 1544.
 chemistry of, A., 666.
 effect of vitamin-C on hyperpigmentation by, A., 417.
 action of, on alcoholic fermentation, A., 1539.
 on blood-cholesterol, A., 667.
 on blood-coagulation, A., 1519.
 on ovary, A., 128.
 on plants, A., 1039.
 on testicles, A., 791.
 abortive action of, A., 1034.
 absorption and excretion of, in man, A., 128, 259.
 destruction of, in the body, A., 1173.
 elimination of, in mania, depression, and schizophrenia, A., 1010.
 in excreta during menstruation, A., 413.
 content of, in normal and ectopic testicles, A., 259.
 experimental goitre from injection of, A., 413.
 production of hermaphrodites by injection of, into chicken embryos, A., 1174.
 masculinising action of, A., 667.
 doses of, for production of intersexuals, A., 1544.
 biological assay of, A., 259.
 determination of, A., 666.
- α -Folliculin**, crystallography and refractometry of, A., 413.
- Fomes pini**, biology of, A., 1432.
- Fomes pomaceus**, infection of plum trees by, A., 1432.
- Fongose**, A., 406.
- Foods**, production of, metals for plant for, B., 459, 554.
 heat transfer in plant for, B., 129.
 use of rubber in, B., 563.
 organic dyes for, B., 540.
 constructional materials for processing of, B., 44.
 drying of, (P.), B., 1067.
 removal of metals from, B., 571.
 colouring and flavouring of, (P.), B., 477.
 flavourings for, (P.), B., 173.
 effects of freezing on, B., 1021.
 irradiation of, (P.), B., 973.
 determination of calorific values of, A., 238.
 additions to improve nutritive value of, B., 922.
 cellulose of, B., 428.
 emulsifiability of fats in, B., 731.
 glyoxaline content of, A., 882.
 availability of iron in, A., 115.
 heavy metals in, A., 247.
 proteins of, A., 1163.
 amino-acids in, A., 1014.
 vitamins in, A., 417; B., 732.
 vitamin-A content of, A., 129.
 decomposition of, in presence of electrolytes, B., 204.
 storage and transport of, B., 605.
 biology of cold-storage of, B., 1116.
 preservation of, (P.), B., 173, 380, 782.
- Foods**, preservation of, apparatus for, (P.), B., 929.
 in tins, (P.), B., 1022.
 canning of, (P.), B., 286, 380.
 bacteriology of, B., 44, 173, 379, 476, 521, 572.
 poisoning bacteria in, B., 652.
 corrosion of tinned-iron containers for, B., 27.
 coating composition for containers for, B., 561.
 vegetable parchment wrapping materials for, B., 16.
 wrapping paper for, (P.), B., 266.
 influence of manuring on, B., 567.
 fungicides and insecticides for, B., 74.
 fumigants for, B., 251.
 adulterants in, B., 922.
 pharmacological action of adulterants and impurities in, B., 922.
 contamination of, by warfare gases, B., 44, 526.
 by metals, B., 122, 1162.
 occurrence of aluminium in, B., 1116.
 prepared in aluminium vessels, slight poisoning from, A., 1160.
 cooking and storage of, in aluminium vessels, A., 1162.
 poisoning of, by cadmium, B., 251.
 indicator for passage of, through alimentary tract, A., 652.
 digestion of, A., 114.
 effect of diet on absorption of, in absence of pancreatic juice, A., 242.
 canned, processing of, in California, B., 331.
 preservation of, with carbon dioxide, (P.), B., 782.
 thermophilic bacteria causing "swells" of, B., 476.
 collection of gas from blown cans of, B., 826.
 vitamins-B₁ and -B₂ in, B., 122.
 cereal, fruit-flavoured, (P.), B., 252.
 determination in, of moisture, B., 1114.
 Chinese, vitamin-C in, A., 903.
 common, digestibility of, A., 1153.
 fermented, chemistry and pharmacology of, A., 125, 529, 1419.
 frozen, microbiology of, B., 331.
 Indian, iodine content of, A., 1154.
 proteins of, A., 1181.
 vitamin-C in, A., 262.
 vegetable, nutritive value of, A., 1153.
 Japanese, "natto," mucous substance of, B., 122.
 liquid, increasing vitamin content of, (P.), B., 204.
 "katadynised," determination in, of silver, B., 744.
 containing oxalates, availability of calcium in, B., 747.
 perishable, preservation of, (P.), B., 523.
 by coatings, (P.), B., 1163.
 by freezing, (P.), B., 876.
 during storage and transport, (P.), B., 1067.
 plant, toxic substance in, A., 396.
 preserved, biological study of food value of, B., 1021.
 proteinaceous, nutritive value of, A., 652.
 summer, infantile disorders from, in relation to methylglyoxal, A., 108.
 synthetic, metabolic effects of, B., 922.
 tinned, vitamin-C in, B., 747.
 determination in, of lead, B., 747.
 waste, collection and disposal of sewage and, B., 430.
 analysis of, use of ultra-violet fluorescence in, B., 172.
- Foods**, colorimetric analysis of, with Zeiss step-photometer, B., 379.
 optical analysis of, B., 172.
 detection of deterioration of, B., 921.
 detection in, of margarine and hardened oils, B., 159.
 of mercury, B., 284.
 of organic pigments, B., 521.
 detection and determination in, of microbin, B., 747.
 determination in, of acid-base balance, A., 554.
 of arsenic and lead, B., 875.
 of copper, B., 331, 746, 1021.
 of fats, B., 1019.
 of pentosans, B., 604.
 of sodium chloride, B., 1116.
 of water, B., 78, 428.
 determination of poisonous metals in colouring matters for, B., 1021.
- Food extracts**, allergen, preparation and stability of, A., 513.
- Food pastes**, detection in, of vegetable lecithin, B., 1116.
- Food products**, manufacture of, (P.), B., 572, 972.
 flavouring of, (P.), B., 923.
 irradiation of, with ultra-violet light, (P.), B., 1022.
 sterilisation of, (P.), B., 827.
 microscopy of, B., 169, 378, 521.
 cereal, (P.), B., 1067.
 determination in, of moisture, B., 45.
- Footwear**, vulcanisation of moulding rubber soles for, B., 1006.
- Force**, chemical, nature of, A., 1058.
- Forests**, effect of soil reaction on growth of, B., 371.
 manuring of, B., 245.
 ecology of humus layer in, B., 1106.
 chemical properties of litter in, B., 1107.
 nutrient content of litter of, B., 245.
 hybridisation of trees in, for improving pulping quality of wood, B., 516.
 of the Upper Peninsula, subdivision of, A., 61.
- Forestry**, mycorrhiza in relation to, B., 968.
- Forficula auricularia**. See Earwigs, European.
- Formals**, cyclic and polymeric, A., 844.
 mixed, preparation of, A., 1104.
- Formaldehyde**, manufacture of, B., 893; (P.), B., 139.
 from methane, (P.), B., 939.
 yield of, in Krasno-Bakovski plant, B., 1036.
 infra-red band spectrum of, A., 1301.
 far ultra-violet absorption spectra of, A., 805.
 photosynthesis of, in tropical sunlight, A., 713.
 electro-reduction of, A., 1462.
 vapour pressure of, A., 691.
 liquid, monomeric, A., 608.
 solid, production of, (P.), B., 218.
 solutions, concentration of, B., 1084.
 aqueous, density of, A., 817.
 stabilisation of, (P.), B., 620, 716.
 polarographic examination of, A., 1107.
 photochemical decomposition of, A., 458.
 catalytic oxidation of methyl alcohol to, B., 442.
 thermal oxidation of, A., 846.
 polymerisation of, A., 711.
 condensation of, catalysis of, by monoses, A., 733, 1224.
 with acetone, A., 984.
 with aromatic amines, A., 1118.

- Formaldehyde**, condensation of, with aniline, and preparation of plastic masses, B., 734.
 with carbamide, B., 194.
 with dinitrodihydroxydiphenyls, A., 627.
 with ketones, A., 622.
 with aromatic ketones, A., 340.
 resins from, with phenol and cresol, B., 1152.
 with quinaldine ethiodide, A., 1379.
 condensation products of, with carbamide, (P.), B., 240.
 manufacture of, (P.), B., 1005, 1057.
 with hexamethylenetetramine and carbamide, (P.), B., 736.
 with phenols, manufacture of, (P.), B., 1005.
 reaction of, with acetophenone and ammonium chloride, A., 355.
 with amino-acids, A., 1356.
 with cyanides, A., 183.
 with aromatic mercaptals, A., 970.
 photochemical reaction of, with chlorine, A., 177.
 thermal reaction of, with chlorine, A., 586, 1107.
p-nitrobenzoylhydrazone, A., 1259.
N-nitroguanylimine, A., 769.
 oxalurhydrazone, A., 869.
 peroxides, A., 1222.
 use of, in preparation of aromatic alcohols, A., 972.
 in detection of vinyl groups, A., 1390.
 disinfection with, B., 832.
 action of, on growth of bacteria, A., 1031.
 effect of, on serum-proteins, A., 1143.
 analysis of, B., 1084.
 identification of, in small quantities, A., 877.
 detection of, in milk, by methylene-blue test, B., 874.
 detection and determination of, in small quantities, A., 1107.
 determination of, A., 846.
 argentometrically, A., 1353.
 in mixtures with formic acid, B., 181.
 in mixtures with formic acid and iodic acid, B., 539.
 separation of, from hexamethylenetetramine, A., 962.
Formaldehydesulphoxylic acid, sodium salt, bactericidal properties of, A., 109, 900.
Formamide, vaporisation of, (P.), B., 92.
Formamides, *N*-disubstituted, formation of aldehydes from organo-magnesium compounds and, A., 736.
β-*N*-Formethylaminoallyl disulphide, A., 1511.
Formic acid, and its esters and salts, constitution of, A., 730.
 production of, (P.), B., 92.
 concentration of, B., 1128; (P.), B., 619.
 thermodynamics of mixtures of water and, A., 24.
 constitution of water in solutions of, A., 1058.
 dissociation constant of, in salt solutions, A., 166.
 equilibrium of, with aniline and water, A., 935.
 decomposition of, by X-rays in aqueous solution, A., 48.
 on lead oxide deposited on birchwood charcoal, A., 1086.
 by moulds, A., 1166.
 catalytic decomposition of, in presence of selenic acid, A., 1084.
 catalytic dehydration of, B., 795.
Formic acid, salts, reaction of, with thionyl chloride and its thermal decomposition products, A., 460.
 oxidation of, by halogens in the dark, A., 1207.
 potassium salt, determination of, in used silver plating baths, B., 105.
 rare-earth salts, A., 606.
 sodium salt, action of, on boron, boron oxide, and boron nitride, A., 459.
 preparation of oxalic acid from, A., 961.
p-bromophenacyl ester, A., 1498.
β-butadienyl ester, manufacture of, (P.), B., 347.
 vinyl ester, manufacture of, (P.), B., 487.
 determination of, A., 876.
 in mixtures with formaldehyde, B., 181.
 in mixtures with formaldehyde and iodic acid, B., 539.
 in lactic acid, B., 1084.
Formic acid, chloro-, esters, manufacture of condensation products of polypeptides and, (P.), B., 487.
 alkyl esters, mobilities of alkyl groups in, A., 1105.
d-(+)-*β*-butyl ester, A., 1230.
 cholesteryl ester, condensation of, with aromatic amines, A., 209.
Formoins, A., 623, 1371.
Formononetin, synthesis of, A., 90.
Formoprene, A., 1221.
Formyl chloride, preparation of, A., 177.
N-Formyl-*β*-aminoethyl alcohol, A., 995.
 Formylanthranilallylamide, A., 365.
N-Formyl-*d*-*S*-benzylhomocysteine, and its brucine salt, A., 737.
N-Formyl-*dl*-*S*-benzylhomocysteine, A., 737.
 Formyl-*n*-butyric acid, ethyl ester, sodium derivative, A., 358.
 5-Formyl-3-butyryl-2,4-dimethylpyrrole, A., 362.
 Formylcarbylamine, imino-, reactions of, A., 966.
 Formylcholic acid, chloro-, ethyl ester, condensation of, with amines and phenols, A., 1366.
 5-Formyl-2,4-dimethyl-3-butylypyrrole, A., 362.
 4-Formylaldehydoerythrose, and its dimethylacetal, A., 1354.
 α-Formylsuccinic acid, esters, condensation of, with esters of α-halogenated acids, A., 1106.
 Forsterite, refractory properties of, B., 768.
 Fossils, micro-, coloration of, A., 726.
 Foundries, use of scrap copper, bronze, and brass in, B., 500.
 non-ferrous, use of charcoal in, B., 1049.
 Fowls, feeding trials with, B., 699.
p_H of digestive tract of, A., 1396.
 phosphatase in, A., 243.
 effect of prolactin on, A., 1426.
 plague amongst, in Egypt, B., 375.
 adult, influence of food on acid-base metabolism of, B., 477.
 creeper, effect of bone extract on bones of, A., 393.
 domestic, composition of flesh of, A., 377.
 embryo, action of thyroxine on, A., 668.
 fasting gizzardectomised, blood of. See under Blood.
Fractionation apparatus, laboratory, A., 59.
 packing materials for towers for, A., 59.
Fractures. See under Bone.
 Frangularol, A., 1041.
 Frangularoside, A., 1041.
Freezing point, lowering of, in relation to constitution, A., 931.
 of aqueous solutions, A., 30.
 of binary mixtures, A., 1077.
Freezing point of binary mixed liquids, determination of, A., 57.
Friction, determination of coefficient of, B., 257.
 fluid, B., 1121.
 kinetic, of surfaces, A., 1065.
Friction materials, (P.), B., 338.
 manufacture of, (P.), B., 579, 580.
 rubber-asbestos yarns for, (P.), B., 1078.
 for brake linings, etc., (P.), B., 435*.
Friedel-Crafts reaction, A., 215.
 mechanism of, A., 980.
 reversibility of, A., 967.
 use of ether as solvent for aluminium chloride in, A., 63.
 with nitro-compounds, A., 867.
 anomalous, A., 866.
Friedelin, A., 1502.
 and its derivatives, A., 1373.
 oxime, and its acetate, and *p*-mono- and 2:4-di-nitrophenylhydrazones, A., 1502.
Fritimine, pharmacology of, A., 894.
Frogs, photosensitised and ultra-violet effects on, A., 400.
 action of plant hormones on spawn development in, A., 1285.
 effect of posterior pituitary extracts on water exchange in, A., 668.
 glutathione in organs of, A., 519.
 embryo, effect of environmental changes on formation of, A., 1021.
 green, effect of strychnine with cardiac tonics on heart of, A., 893.
 variations in liver- and muscle-nitrogen in, A., 644.
 carbohydrates of albuminous gland of, A., 1523.
 hibernating and spawning, creatine-creatinine ratio in, A., 1530.
Fructoheptonic acids, configuration of, and their derivatives, A., 197.
5-Fructonose, and its derivatives, A., 200.
 α-Fructopyranose *pentaacetate*, A., 1484.
Fructose, yellow coloration of mixtures of pyridine and, by ultra-violet light, A., 1130.
 rotatory dispersion of open-chain derivatives of, A., 809.
 decomposition of, by ultra-violet light, in glass vessels, A., 1109.
 by ultra-violet light and in quartz light, in presence of pyridine, A., 68.
 ultra-violet photolysis of, in glycerol, A., 713.
 oxidation of, in ammoniacal solution, A., 1109.
 reducing power of, A., 1355.
 effect of asparagine on, A., 329.
 in plants, A., 673.
 fermentation of, by yeast, A., 1538.
 effect of adrenaline on utilisation of, in the body, A., 1542.
 effect of administration of, on lactic acid in blood and urine, A., 1017.
 absorption of, by organs, A., 240.
 in human amniotic fluid, A., 378.
 phosphate, formation of, from glucose and glyceraldehyde by red blood-corpuscles, A., 104.
 1-phosphate, and its barium salt, A., 660.
 colour reaction for, A., 1484.
 determination of, A., 674.
 by colorimetric cryogenic method, A., 1392.
 in blood, A., 770, 1001.
 in fruit, A., 240.
 in presence of glucose and sucrose, A., 68.
 and glucose in mixed solutions, A., 133.
Fructose, *β*-chloro-, 2:6-tetraacetate, Walden inversion in, A., 200.

- d*-Fructose, transition of, into *d*-psicose and *d*-sorbitose, A., 735.
- α -Fructose 2:6-pentaacetate, preparation of, A., 200.
- 2:7-pentaacetate, constitution of, A., 1484.
- ψ -Fructose. See Psicose.
- Fructose anhydrides, A., 69, 1354.
- β -*h*-Fructosidase, inversion of sucrose by, in heavy water, A., 43.
- Fructosides in plants, A., 673.
- Fruit or Fruits, drying apparatus for, (P.), B., 929.
- conditioning of, with water, (P.), B., 782.
- effect of hydrogen cyanide on, B., 781.
- insecticides for, B., 246.
- removal of residues of insecticides from, (P.), B., 748.
- removal of lead arsenate residues from, B., 247.
- spray residues on, B., 875.
- removal of poisonous spray residues from, (P.), B., 380.
- physico-chemical properties of, A., 892.
- removal of stains of, from linen, etc., (P.), B., 186.
- keeping quality of, B., 43.
- influence of high-frequency electric field on, B., 1020.
- fertiliser treatment and, B., 246.
- effect of nitrogen, potassium, and phosphorus on keeping and shipping quality of, B., 117.
- preservation of, (P.), B., 1022, 1067, 1163.
- with sulphur dioxide, B., 826.
- failures in, B., 652.
- corrosion of containers by preserves of, B., 572.
- coating of, with rubber latex, (P.), B., 39.
- iodised wrapping paper for storage of, B., 204.
- ascorbic acid and carotenoids in, A., 670.
- available carbohydrate of, A., 240.
- effect of ethylene on vitamin content of, B., 172.
- influence of treatment on vitamin-C in, B., 428.
- maturity of, B., 826.
- device for testing, (P.), B., 1116.
- out, prevention of discoloration of, by pineapple juice, B., 1162.
- dried; nutritive value of, B., 476.
- vitamin-C in, A., 546.
- fleshy, substance inhibitory to germination in, A., 264.
- fresh, preservation of, (P.), B., 748.
- preservation and storage of, (P.), B., 477.
- coating of, for market, (P.), B., 1067.
- bacteria on, A., 1281.
- frozen, microbiology of, B., 331.
- Italian, fresh and dried, composition of, B., 1020.
- Philippine, colouring of, with ethylene, borax, etc., B., 250.
- Polish, sorbitol in, B., 43.
- subtropical, artificial ripening of, by alcohol and ethylene, B., 652.
- summer, Peiping, vitamin-C, content of, A., 262.
- tropical, acetaldehyde in, B., 875.
- Fruit juices, concentration of, (P.), B., 380.
- improving flavour of, (P.), B., 123.
- treatment of, with *Lactobacilli*, (P.), B., 1116.
- vitamin-C in, B., 172.
- enzymic clarification of, B., 376.
- Fruit juices, clarification and preservation of, (P.), B., 876.
- preservation of, (P.), B., 44, 123.
- attack of tinned-brass vessels by, B., 122.
- manufacture of beverages from, (P.), B., 252.
- production of alcoholic beverages from, B., 569.
- bottling of carbonated beverages of, B., 251.
- formol number of, B., 747.
- Fruit products, B., 824.
- dried, production of, (P.), B., 44.
- determination in, of water, B., 605.
- Fruit syrups, composition of, B., 1020.
- determination in, of sucrose, invert sugar, and starch syrup, B., 202.
- Fruit trees, seasonal cycle of carbohydrate and nitrogenous materials in, A., 264.
- winter treatment of, with anthracene oil emulsions, B., 472.
- chlorosis of, B., 517.
- larvicidal efficiency of sprays against leaf roller on, B., 968.
- "rosette" of, A., 554.
- in California, B., 691.
- deciduous, chlorosis of, B., 471.
- stone-, bacterial diseases of, in Britain, B., 1013.
- Victorian, mineral nutrition in, A., 797.
- Fu Chü. See Tangerines.
- Fuadin, B., 123.
- Fuchsin, acid, and methylene blue, staining of subcutaneous tissues with, A., 378.
- Fuchson, 4-nitro-4'-hydroxy-, and its benzoyl derivative, A., 208.
- Fucohexonic acids, configurations of, and their derivatives, A., 328.
- Fucose, rotatory dispersion of open-chain derivatives of, A., 809.
- epi*Fucostanol, A., 1235.
- α - and β -Fucosterones, and their 2:4-dinitrophenylhydrazones, A., 1235.
- Fucosterol, reduction of, A., 1235.
- Fucus vesiculosus*, lipochromes of, A., 1040.
- Fuel or Fuels, production of, (P.), B., 393, 538, 838, 1082.
- treatment of, to prevent dust, (P.), B., 342.
- gum inhibitor for, (P.), B., 759.
- use of bituminous shale as, B., 1028.
- use of propane and butane as, B., 212.
- calculation of calorific value of, B., 834.
- water-vapour corrections in calorific value of, B., 389.
- activation of, by sodium carbonate, B., 884.
- gasification of, by air enriched with oxygen, B., 389.
- knocking in, B., 179.
- dispersions of, in oils, (P.), B., 538.
- sources of hydrogen in hydrogenation of, B., 85.
- production of electricity from, B., 292.
- determination of m.p. of ash of, B., 6.
- cold test for, B., 614, 888.
- aero-engine, alcohol-gasoline mixtures for, B., 293.
- Alberta, B., 1122.
- containing alcohols, ignition temperature of, B., 791.
- blended, recovery of volatile values from, (P.), B., 663.
- use of, in boilers, B., 833.
- British, (P.), B., 483.
- carbonaceous, coking of, (P.), B., 1125.
- composite, (P.), B., 8.
- Diesel, production of, from pitch and brown-coal tar, B., 391.
- Fuel or Fuels, Diesel, use of physical constants in determination of cetene number of, B., 934.
- brown-coal, physical properties and ignition of, B., 1031.
- difficultly-combustible, determination of calorific value of, B., 884.
- containing ethyl alcohol, volatility of, B., 342, 484.
- ethyl alcohol-*cyclohexane*, starting temperature of engines using, B., 484.
- finely-divided, agglomeration of, (P.), B., 8.
- gasification of, (P.), B., 260.
- gaseous, production of, (P.), B., 792, 793.
- hydrocarbon, combustion of, A., 937.
- isomeric, knocking properties of, B., 614.
- liquid, manufacture of, (P.), B., 1034.
- from brown coal, B., 1124.
- synthesis of lubricating oils and, from carbon monoxide and hydrogen, B., 179.
- burning of, (P.), B., 441, 1128.
- from coal, for naval purposes, B., 212.
- low-boiling, production of, from crude anthracene, B., 708.
- low-grade, burning of, (P.), B., 55.
- combustion of, in supercharged furnaces, B., 1123.
- motor, (P.), B., 11, 181, 216, 662, 713.
- production of, (P.), B., 295, 583, 663, 984.
- from coal, B., 293.
- from hydrocarbon oils, (P.), B., 1128.
- treatment of, to prevent pitch formation, (P.), B., 181.
- refining of, by Instill process, B., 179.
- desulphurisation of, (P.), B., 441.
- reducing discoloration of, (P.), B., 181.
- gum in, B., 54.
- gum inhibitors for, (P.), B., 216, 486*, 937.
- alcohol-hydrocarbon mixtures for, (P.), B., 937.
- anti-knock composition for, (P.), B., 892.
- compressed gas as, B., 835.
- sulphur and sulphur compounds in, B., 7.
- evaluation of, B., 1031.
- increasing octane number of, (P.), B., 1035.
- stabilisation of, (P.), B., 662.
- stability of, in storage, B., 1031.
- alcohol-benzene, determination of benzene in, B., 536.
- antiknock, manufacture of, (P.), B., 90, 216.
- hydrocarbon, production of, (P.), B., 343.
- light, determination of octane number of, B., 660.
- oxidised, (P.), B., 713.
- self-compensated, (P.), B., 838.
- non-detonating, (P.), B., 216.
- oil, (P.), B., 713.
- production of, (P.), B., 712.
- treatment of, (P.), B., 135, 1083.
- destructive hydrogenation of, B., 54.
- compositions of powdered coal and, (P.), B., 55.
- creosote, for use in glass works, B., 484.
- determination of sulphur in, B., 54.
- pulverulent, burner for, (P.), B., 892.
- smokeless, recovery of, from carbonaceous materials, (P.), B., 87.
- solid, degasification of, in chamber ovens, (P.), B., 87.
- carbonisation of, (P.), B., 179.

- Fuel or Fuels**, solid, carbonisation of, determination of yields of volatile products in, B., 979.
 ignitable by a spark, (P.), B., 393.
 reactivity of, at high temperatures, B., 978.
 for heating, B., 178.
 for internal-combustion engines, B., 534.
 sampling and analysis of, for steam-boiler trials, B., 978.
 analysis of, B., 389.
 microchemical analysis of, B., 1027.
 detection of, in cases of arson, B., 1123.
- Fuel briquettes**. See under *Briquettes*.
- Fugacities**, of pure compounds, A., 290.
- Fukugetin**, constitution of, A., 220.
- Fukugetins**, isomeric, derivatives of, A., 220.
- Fulminic acid**, mechanism and thermal effect of polymerisation of, A., 1464.
- Fulvenes**, in ionone series, A., 203.
- Fulvene series**, Diels-Alder reaction in, A., 852.
- Fulvic acid**, and its derivatives, A., 786.
- Fumaraldehydic acid**, methyl ester, and its 2:4-dinitrophenylhydrazones, A., 731.
- Fumarase**, temperature coefficient of, A., 249.
- Michaelis constant for, A., 249.
- thermodynamics of action of, A., 121.
- inactivation of, A., 1536.
- action on, of cyanides and thiocyanates, A., 658.
 of fluorides and of iodoacetic acid, A., 658.
- Fumaria officinalis**, constituents of, A., 796.
- Fumaric acid**, and its salts, action of ultra-violet light and platinum on, A., 178.
 and its methyl ester, heat of sublimation of, A., 436.
 multiple condensation of maleic acid and with ethylene glycol, A., 474.
 preparation of acetylenedicarboxylic acid from, A., 846.
 ethyl ester, condensation of, with ethyl benzylmalonate, A., 977.
 significance of, in respiration of animal tissues, A., 1406.
 determination of, microchemically, A., 1406.
- Fumaric acid**, dibromo-, methyl ester, chloride, A., 352.
- Fumaronitrile**, A., 737.
- ultra-violet absorption spectrum of, A., 563.
- Fumarylcarbamide**, A., 993.
- Fumaryldicarbamide**, A., 993.
- Fume cupboards**, sucking gases out of, A., 1219.
 laboratory, ventilation of, A., 723.
- Fumigants**, for foods, B., 251.
 determination of, B., 928.
- Fumigation**, B., 335; (P.), B., 176.
 compositions for, B., 517; (P.), B., 576.
 insecticides for, B., 1071.
 laboratory apparatus for experiments on, B., 127.
 of ships, by Clayton method, B., 527.
 of ships and warehouses, B., 832.
- Fundulus**, action of adrenalin on melanophores of, A., 900.
- Fundulus parvipinnis**, effect of ingested carotenoids on xanthophyll content of, A., 1151.
- Fungi**, culture of, A., 535.
 effect of dyes on colonies of, A., 1031.
 thermochemistry in growth of, A., 1027.
 nitrogen fixation in soils by, B., 514.
 protection of wood against, (P.), B., 806.
- Fungi**, chemical characteristics of, A., 1042.
 carotenoids of, A., 254.
 colouring matters of, A., 347.
 activity of lipase of, A., 534.
 phosphatases in, A., 1280.
 decomposition of polyuronides by, A., 254.
 beneficial, A., 786.
 edible, vitamin-D in, A., 1287.
 higher, chemistry of, A., 1432.
- Fungicides**, (P.), B., 200, 327, 375, 518, 692, 743*, 1159.
 manufacture of, B., 648; (P.), B., 348, 743.
 oil-soluble copper for, B., 690.
 complex copper compounds for, (P.), B., 568.
 production of copper compounds for, (P.), B., 495.
 cuprous oxide as, B., 567.
 from copper phosphate, B., 567.
 disinfectants and, (P.), B., 784.
 sulphur as, B., 568.
 combined insecticides and, B., 517, 822.
 manufacture of, (P.), B., 473.
 toxicity of metals as, B., 199.
 organic thiocyanates and resorcinol derivatives as, B., 1110.
 wetting-out agents for, (P.), B., 743.
 for foods, B., 74.
 copper-limo-arsenite, B., 567.
 eradicant, application of, B., 568.
- Funnels**, filter, (P.), B., 788.
 hot-water, A., 321.
- Furs**, production of, B., 322.
 carroting of, (P.), B., 145.
 softening and waterproofing of, (P.), B., 98.
 production of dermatitis by, B., 722.
- Furan**, nuclear condensations of, A., 219.
 nucleus, reactions of β -ketonic acids containing, A., 1503.
 arsenicals containing, A., 228, 997.
 Raman spectrum of, A., 146.
 and its derivatives, hydrogenation of, (P.), B., 664.
 derivatives, ionisation constants and parachors of, A., 1306.
 halochromy of, A., 626.
 condensation of, A., 984.
 α -substituted derivatives, absorption spectrum of, A., 563.
 unsaturated ketone derivatives of, A., 626.
- Furan series**, orientation in, A., 860, 985.
 optical absorption in, A., 1300.
 chemical morphology in, A., 1377.
 oxidations in, A., 1246.
- Furan-3:4-dicarboxylic acid**, A., 1376.
- Furantetracarboxylic acid**, A., 1376.
- Furazans**, dipole moments of, A., 684.
- Furazan ring**, structure of, A., 810.
- Furfuraldehyde**, manufacture of, B., 56; (P.), B., 297.
 from cottonseed hulls, B., 442.
 by hydrolysis of wood, B., 795.
 extraction of, from aqueous solutions, A., 984.
 crystallisation of anthracene from, B., 12.
 diacetyl in, B., 714.
 corrosion of iron by, B., 104.
 condensation of, with carbohydrates, A., 847.
 with phloroglucinol, and its separation from methylfurfuraldehyde and hydroxymethylfurfuraldehyde, A., 769.
 coloured condensation products of, with acetone, A., 984.
- Furfuraldehyde**, reaction of, with alcohols and olefines, A., 934.
m-nitrobenzhydrazide, A., 743.
p-nitrobenzoylhydrazones, A., 1259.
o-tolylsemicarbazone, A., 1259.
 use of, in determination of pentosans, A., 1354.
 in bread, maize, and tobacco, B., 91.
 relation between uronic acid and, in cell-walls of plants, A., 1042.
 determination of, B., 91.
 by means of diphenylthiobarbituric acid, A., 370.
- 2-Furfuraldehyde**, Friedel-Crafts reaction with, A., 866.
- Furfuryl 3:5-dinitrobenzoate**, A., 479.
- 2-Furfurylacetophenone**, and its semicarbazone, A., 1128.
- 2-Furfurylidene-2-acetofurone**, A., 1377.
- Furfurylideneacetophenone hydrochloride**, A., 626.
- 2-Furfurylideneacetophenone**, A., 1377.
- 2-Furfurylidene-2-acetothione**, A., 1377.
- 2-Furfurylideneaminophenyl disulphide**, A., 1386.
- 2-Furfurylideneaminothiophenol**, zinc salt, A., 1386.
- Furfurylideneanisylideneacetone**, A., 626.
- Furfurylidene-*p*-bromoacetophenone hydrochloride**, A., 626.
- Furfurylidene-*p*-chloroacetophenone hydrochloride**, A., 626.
- Furfurylideneacetone**, A., 352.
- 5-Furfurylideneacetanilide**, and its salts, A., 352.
- Furfurylidene-*p*-dimethylaminobenzylideneacetone**, A., 626.
- 4:6-Furfurylidene-2:3-dimethyl- α -methylglucoside**, A., 847.
- Furfurylidene-*p*-methoxyacetophenone hydrochloride**, A., 626.
- Furfurylidene-*p*-methylacetophenone hydrochloride**, A., 626.
- 5-Furfurylideneethylacetanilide**, and its picrate, A., 352.
- 4:6-Furfurylidene- α -methylglucoside 2:3-diacetate**, A., 847.
- 4:6-Furfurylidene- α -methylmannoside**, A., 847.
- Furfurylidene-*mono*- and -*di*-nitrotoluidines**, A., 76.
- Furfurylidenepiperonylideneacetone**, A., 626.
- Furnaces**, (P.), B., 337, 385, 520, 753, 788, 977, 1121.
 use of iron and its alloys in construction of, B., 25.
 cellular clay insulation for, (P.), B., 902.
 gas producers for, (P.), B., 792.
 oil gas burners for, (P.), B., 757.
 use of Estonian oil shale in, B., 483.
 rotary firegrates for, (P.), B., 486.
 underfeed mechanical stoker for, (P.), B., 659.
 crushers for ash-pits of, (P.), B., 3.
 refractory linings for, (P.), B., 902.
 regenerators for, (P.), B., 1025.
 fume abatement from, (P.), B., 1122.
 perfect and imperfect combustion in, B., 707.
 effects of combustion methods on temperature uniformity of, B., 724.
 production of luminous flame in, (P.), B., 893.
 calculation of heat developed by combustion gases in, B., 833.
 heat calculations in, B., 609.
 transmission of heat through walls of, B., 129.
 for electrometallurgy, (P.), B., 1053.

- Furnaces for glass-melting, etc., (P.), B., 902.
 for bright-annealing of metals, etc., (P.), B., 955.
 for heat treatment of metals, (P.), B., 313.
 for heat treatment of metal strips, (P.), B., 998.
 for reduction of ores, etc., (P.), B., 29.
 for roasting of ores, etc., (P.), B., 679.
 for smelting, (P.), B., 906.
 for steel annealing, etc., refractory bricks for, B., 727.
 for roasting sulphide ores, etc., (P.), B., 555.
 for tempering and heat treatment, (P.), B., 1025.
- Furnaces, annealing, (P.), B., 460, 809.
 regulation of heat in, B., 676.
 for metal strips, (P.), B., 998.
 blast, tuyère for, (P.), B., 955.
 external heat loss of, B., 593.
 testing of coke for, B., 932.
 injection of dust charges into, by Heskamp process, B., 309.
 smelting of lead ores in, B., 412.
 use of burned limestone in, B., 676.
 reduction of ores in, B., 150.
 operation of, with oxygen-enriched blasts, B., 633, 898, 904.
 uses of, in chemical industry, B., 81.
 Minetto, operation of, B., 150.
 slack-wind, operation of, B., 1046.
- boiler, (P.), B., 931.
 for fuels of high moisture content, (P.), B., 659.
 slag-tap, floors of, (P.), B., 1027.
 cupola, regulation of, B., 904.
 calculation of metal charges for, B., 633.
 thermochemistry of, B., 593.
 domestic, for anthracite, B., 932.
 electric, (P.), B., 29, 558, 811, 858.
 operation of, (P.), B., 316.
 wooden cores for, B., 858.
 failure of gold fuses in contact with nickel-chromium alloy windings in, B., 953.
 temperature in, B., 209.
 temperature control of, (P.), B., 29.
 automatic, B., 67.
 heat treatment of metals in, B., 360, 554.
 use of, for industrial heat treatment, B., 593.
 for firing of ceramics, etc., B., 851.
 for melting of glass, (P.), B., 682.
 for laboratory distillation, B., 67.
 for salt-bath furnaces, (P.), B., 237.
 for melting vitreous materials, (P.), B., 23.
 eddy-current, (P.), B., 316.
 graphite-resistor, B., 1052.
 heating, (P.), B., 731.
 induction, B., 681; (P.), B., 29, 363, 811, 858, 910, 957, 1052, 1100.
 for melting of glass, quartz, etc., (P.), B., 507.
 for melting of light metals, A., 319.
 with submerged resistors, B., 67.
 coreless, (P.), B., 237.
 in steel works, B., 811.
 laboratory, for production of steel, B., 150.
 three-phase, (P.), B., 773.
 micro-muffle, A., 1096.
 resistance, (P.), B., 773, 811.
 wire for, B., 158.
 fixing of heating elements in, (P.), B., 958.
- Furnaces, electric, resistance, ten-kilowatt granular-carbon, B., 158.
 three-phase, reactance of, B., 557.
 vacuum resistance, A., 583.
 gas-fired, (P.), B., 49.
 heat treatment, (P.), B., 609, 753, 785, 786.
 work-batch location indicator for, (P.), B., 755.
 high-temperature, A., 951.
 laboratory, temperature-control apparatus for, A., 1339.
 melting, for easily oxidised materials, (P.), B., 210.
 metallurgical, use of Bogoslovsk brown coal as fuel for, B., 1122.
 micro-, A., 465.
 muffle, (P.), B., 257, 901.
 open-hearth, operation of, (P.), B., 28.
 linings for, (P.), B., 950.
 waste-heat boilers for, B., 977.
 resistance of bottoms of, B., 904.
 refractory bricks for, B., 454.
 chemistry of heating in, B., 1046.
 air-leaks in, B., 548.
 for production of steel, etc., (P.), B., 595.
 for steel, refractories for, B., 409.
 basic, effect of insulation on silica bricks in roofs of, B., 454.
 regenerative, (P.), B., 337, 786.
 reverberatory, for melting, (P.), B., 555.
 retort, heating of, (P.), B., 134.
 for carbonisation of solids, etc., (P.), B., 582.
 rotary, (P.), B., 129, 313, 460.
 ring formation ("Ansatzring") in linings of, B., 881.
 for combustion of town refuse, etc., (P.), B., 336.
 for treating pulverised ores with gases, (P.), B., 857.
 drum, (P.), B., 49, 929.
 operation of, (P.), B., 906.
 melting, refractory linings for, (P.), B., 993.
 rotary and semi-rotary, for melting metals, (P.), B., 154.
 rotary-hearth, (P.), B., 657.
 shaft, (P.), B., 337.
 smelting, feeding of paper mill black liquor to, (P.), B., 1041.
 supercharged, intensified combustion in, B., 1123.
 tube, (P.), B., 83.
 vacuum, (P.), B., 433.
 Fuerooumarins, A., 986.
 Furoic acid, germicidal action of α -alkyl derivatives of, B., 1024.
 2-Furoic acid, 3:5-dibromo-, Hill's, A., 985.
 Furoylacetylacetic acid, ethyl ester, A., 1503.
 β -Furoylbutyric acids, ethyl esters and amides of, A., 1503.
 α -Furoyl- α -ethylbutyric acid, ethyl ester and amide of, A., 1503.
 α -Furoyl- α -methylbutyric acid, ethyl ester and amide of, A., 1503.
 2-Furoylcyclopropane-1-carboxylic acid, ethyl ester and amide of, A., 1503.
 α -Furoylpropionic acid, ethyl ester and amide of, A., 1503.
 Furoylketone *o*-tolylsemicarbazone, A., 1259.
 Furoylacetaldehyde, structure of compound formed by hydrogenation of, A., 90.
 Furoylacrylyl-*p*-hydroxyphenylurea. See Ethynal.
 Furoalkylcarbinols, catalytic dehydration of, A., 867.
- 2-Furyl *p*-bromophenyl ketone, and its semicarbazone, A., 626.
 Furyl isobutyl ketone, and its semicarbazone, A., 1503.
 Furyldichloroarsine, A., 997.
 2-Furyl chloromethyl ketone, A., 867.
 2-Furyl *p*-chlorophenyl ketone, and its semicarbazone, A., 626.
 2-Furyldiethylcarbinol, A., 1503.
 β -Furyl- α -dimethyl- n -valeric acid, β -hydroxy-, ethyl ester, A., 1503.
 2-Furyldiphenylcarbinol, A., 1503.
 Furyl ethyl ketone, semicarbazone, A., 1503.
 Furyl α -ethyl-*n*-propyl ketone, and its semicarbazone, A., 1503.
 α -Furylheptatrienoic acid, A., 1300.
 2-Furyl (β -hydroxy- β -diphenyl- α -dimethyl)ethyl ketone, A., 1503.
 2-Furyl *p*-methoxyphenyl ketone, A., 626.
 2-Furylmethyl- Δ^2 -propenylpyridinium bromide, α -hydroxy-, A., 1131.
 Furyl phenyl ketimine, and its hydrochloride, A., 220.
 Furyl propyl ketones, and their semicarbazones, A., 1503.
 2-Furyl *p*-tolyl ketone, and its semicarbazone, A., 626.
 4-Furyl-2-*p*-tolylpyrimidine, 5-hydroxy-, A., 1133.
 Fusain, determination of, in coal dust, B., 706.
Fusarium diseases, and soil conditions, B., 471.
Fusarium betæ, physiology of, A., 405.
Fusarium lini and *lycopersici*, metabolism of, A., 535.
Fusarium oxysporium, effect of amino-acids on carbon dioxide and mycelium production of, A., 254.
 Fuses, (P.), B., 879.
 non-inflammable covering for cords of, (P.), B., 832.
 blasting, flash compositions for electric igniters for, (P.), B., 704.
 electric, gold, failure of, in contact with nickel-chromium alloys, B., 953.
 thin, time of melting of, A., 289.
 waterproof, manufacture of, for blasting, etc., (P.), B., 976.
 Fusel oil, production of, from fermented mash, B., 284.
 stage of fermentation for, B., 169.
sec-butyl alcohol in, B., 745.
 detection of, by salicylaldehyde reaction, B., 839.
 Fusion, A., 157.
 relation between strength and, A., 688.
 effect of high pressures on temperatures of, A., 688.
 Fustin, constitution of, A., 757.

G.

- Gadolinium, preparation of, A., 456, 711.
 arc spectrum of, A., 556.
 ferromagnetism of, A., 1063.
 paramagnetism of, above its Curie point, A., 1454.
 Gadolinium compounds, production of, A., 180.
 Gadolinium sulphate, production of low temperatures by demagnetisation of, A., 1096.
 octahydrate, heat capacity of, A., 156, 574.
 Gadolinium determination :-
 determination of, in rare-earth mixtures, A., 1338.

- Gadusane**, A., 1264.
Gadusene, A., 1264, 1398.
Galactin, effect of, on mammary glands of monkeys, A., 1426.
Galactoaraban, from peanut seeds, A., 736.
Galactoarabotriose nonaacetate, A., 736.
Galactogen, A., 232.
 detection of, in animals and man, A., 232.
Galactonic acid from fermentation of galactose, A., 125.
 lead salt, A., 732.
Galactose, formation of, from glucose by optical inversion, A., 963.
 heptaacetates of, A., 1225.
 ethylmercaptal, 6-benzoyl derivative, A., 1354.
 fermentation of, by acetic acid bacteria, A., 125.
 absorption of, by organs, A., 240.
 effect of neosalvarsan on assimilation of, A., 781.
 fate of, in adult dogs and rabbits, A., 1409.
 ingestion of, in dogs, A., 891.
 metabolism of. See under Metabolism.
 utilisation of, after liver removal, A., 1409.
 determination of, in urine, A., 270.
d-Galactose, formation of, from *d*-glucose, A., 329.
 2:3:4:5-tetraacetate 6-triphenylmethyl ether, and its semiacetal and semicarbazone, A., 735.
 ethyl mercaptal 2:3:4:5-tetraacetate and its 6-triphenylmethyl ether, and 2:3:4:5-tetrabenzoate 6-triphenylmethyl ether, A., 735.
Galacturonic acid as precursor of ascorbic acid, A., 1175.
 determination of, by Bertrand's method, A., 328.
d-Galacturonic acid, esterification and acylation of, A., 608.
 reduction of, A., 196.
 derivatives of, A., 608, 1352.
 α -d-Galacturonic acid, methyl ester, and its relation to ascorbic acid, A., 732.
 α -d-Galacturonic acid, α -1-bromo-, 2:3:4-triacetate, methyl ester, A., 1352.
Galena, roasting and sintering of, (P.), B., 235.
 wetting of, A., 442.
 selective incrustation of, A., 61.
 diffraction of slow electrons by, A., 1308, 1309.
 inner potential of, A., 1309.
 influence of xanthates on surface potential of, A., 442.
 passage of cathode rays through, A., 434.
 limonite types of, A., 725.
U-Galena in Bedford cyrtolite, A., 954.
Galinsoga parviflora, pharmacology of extracts of, A., 655.
Galiopine, synthesis of quinazoline derivatives analogous to, A., 760.
Galipine, synthesis of quinazoline derivatives analogous to, A., 760.
Galls, bacteria causing, on plants, A., 798.
 crown, composition of, A., 798.
Gall bladder, caesium salt for visualisation of, A., 1264.
 of chickens, effect of antirachitic factor in diet on, A., 417.
 isolated, response of, to cholecystokinin, A., 1171.
Gall-stones, formation of, A., 1006.
 p_H of bile in relation to, A., 384.
 crystals of magnesium ammonium phosphates in, A., 811.
Galleria mellonella, biochemistry of, A., 646.
 respiratory metabolism of, A., 889.
 change in reducing substances during metamorphosis of, A., 519.
Gallic acid, Raman spectrum of solutions of, A., 1446.
 and its methyl esters, synthesis of phenyl-acetic acids from, A., 619.
 iron salt, use of, in inks, B., 913.
n-butyl and *n*-propyl esters, A., 1237.
 determination of, colorimetrically, B., 1129.
 colorimetric determination of cerium and titanium with, A., 464.
Gallium, at. wt. and isotopes of, A., 802.
 extraction of, from germanite, A., 1470.
 purification of, A., 180.
 by fractional crystallisation, A., 1470.
 optical constants of, A., 814.
 electro-deposition and -dissolving of, A., 1463.
 and its amalgam, potential of, in gallium salt solutions, A., 1325.
 Hall effect in, A., 1310.
 f.p. of, A., 155.
 colloidal, A., 444.
 from Northumberland coal ash, A., 716.
Gallium alloys with aluminium, A., 291.
 with copper, A., 22.
Gallium halides, emission and absorption spectra of, A., 144.
 nitride, A., 945.
Gallotannic acid, iron salt, inks from, B., 859.
Galvanisation, solutions for, B., 1050.
Galvanometers, suspension of, A., 599.
 superconducting, A., 839.
Gangleoidin, and its derivatives, A., 550.
Garbage, treatment of, (P.), B., 928.
 digestion of, in sewage-treatment plant, B., 1071.
 disposal of, (P.), B., 1072.
 incineration of, (P.), B., 656.
Garcinol, constitution of, and its derivatives, A., 220.
Gardens, market, in Paris district, B., 742.
Gardinol, determination of, B., 449.
Garlic, vitamin-C in, B., 171.
 stored, vitamin-C in, A., 417.
Garnet from New Hampshire, A., 1102.
Gas, coal, manufacture of, in relation to coal petrography, B., 388.
 comparison of vertical-retort and vertical-chamber ovens for, B., 1124.
 from brown-coal briquettes, B., 437.
 use of carburetted water-gas in, B., 708.
 and coke, (P.), B., 615.
 and oil, (P.), B., 213.
 gum problem in, B., 341.
 recovery of sulphur in, (P.), B., 260.
 recovery of benzene from, with active charcoal, B., 708.
 with silica gel, B., 292.
 removal and recovery of benzene and naphthalene from, (P.), B., 440.
 purification of, B., 932, 979; (P.), B., 440.
 granular material for, (P.), B., 758.
 regeneration of materials from, (P.), B., 1082.
 by refrigeration, and production of benzol, B., 391.
 dry purification of, B., 884.
 thio-bacterial action in purifiers for, B., 390.
 removal of gum-forming constituents from, (P.), B., 440.
 separation of oils from, B., 934.
Gas, coal, removal of sulphur from, for distance transmission, B., 756.
 removal of sulphur compounds from, (P.), B., 583.
 contamination of, with naphthalene, B., 53.
 detoxication of, B., 612.
 drying of, with glycerol, B., 708.
 control of quality of, B., 1080.
 control of calorific value of, B., 789.
 of high calorific value, production of, (P.), B., 890.
 gum deposits in distribution systems for, B., 888, 1080.
 prevention of, (P.), B., 1033.
 effect of porous vertical chamber walls on, B., 789.
 determination of density of, B., 341.
 catalytic pyrolysis of, B., 258.
 corrosion from products of combustion of, B., 6.
 "hydrocarbon enrichment value" of, B., 389.
 recovery of by-products from, (P.), B., 758.
 determination in, of naphthalene, B., 341, 933.
 coke-oven, purification of, B., 708.
 separation of constituents of, by cooling, B., 534.
 removal of naphthalene from, B., 1080.
 temperature of anthracene oil for, B., 979.
 desulphurisation of, B., 292.
 electrostatic de-tarring of, B., 341.
 dry cleaning of, B., 1124.
 calculation of quantity and calorific value of, B., 1080.
 reaction of carbon monoxide and hydrogen in, with molybdenum catalysts, B., 390.
 synthesis of benzene from, B., 390.
 liquid hydrocarbons from, on iron-nickel catalysts in electric discharge, B., 394.
 production of "synthesis gas" from steam and, B., 1079.
 determination in, of nitric oxide, B., 341.
 of olefines and paraffins, B., 789.
 electrolytic, possible ignition of, by fast electrons, A., 1212.
fuel, manufacture of, from hydrocarbon oils, (P.), B., 88.
 purification of, (P.), B., 537.
 dehydration and removal of hydrocarbons from, (P.), B., 393.
 enrichment and burning of, (P.), B., 90.
 for blow-pipes, etc., (P.), B., 662.
 generator, determination in, of hydrogen sulphide and sulphur dioxide, B., 6.
 illuminating, manufacture of, (P.), B., 936.
 from bituminous sandstones, B., 211.
 removal of carbon monoxide from, B., 390.
 resinous deposits from, B., 979.
 effect of, on plants, B., 515.
 toxicity of, B., 53.
 poisoning by. See under Poisoning.
 effect of exposure to, on blood and reproduction, A., 895.
low-gravity, manufacture of, (P.), B., 711.
natural, B., 132.
 argon-nitrogen ratio in, A., 724.
 origin of helium in, A., 322.
 water vapour in, B., 660.
 reduction of zinc oxide with, A., 592.
 production of acetylene from, (P.), B., 343.

Gas, natural, production of gaseous fuels from, (P.), B., 792.
 synthesis of liquid hydrocarbons from, B., 292.
 production of mixtures of hydrogen and nitrogen from, (P.), B., 439.
 utilisation of, (P.), B., 663.
 as boiler fuel, B., 132.
 liquefied, fractionation of, B., 132.
 in Nienhagen oilfield, B., 391.
 Rumanian, action of methane in, on calcium chloride, B., 534.
 in S. Bavaria, A., 956.
 in Tyrnävä, A., 600.
 determination in, of helium, B., 186, 225.
 oil, manufacture of, (P.), B., 134, 213, 260, 439, 537, 757, 982.
 apparatus for, (P.), B., 485.
 from fuel oil, (P.), B., 538.
 production and combustion of, in furnaces, (P.), B., 757.
 use of butane as substitute for, at Needles, B., 438.
 producer, manufacture of, from low-grade fuels, B., 389.
 apparatus for, (P.), B., 936.
 and coke, (P.), B., 1082.
 removal of sulphur compounds from, (P.), B., 583.
 sludge-, compressed, operation of vehicles with, B., 660.
 town, production of, B., 979.
 from water-gas, B., 756.
 treatment of, (P.), B., 936.
 drying and purification of, with silica gel, B., 756.
 removal from, of carbon monoxide, B., 884.
 washing of carbon dioxide from, made from lignite by Bubiag-Didier system, B., 979.
 removal of nitrogen oxides from, with ferric oxide, B., 1124.
 detoxification of, B., 708.
 radiation from surface combustion of, B., 178.
 heat economy in industrial applications of, B., 389.
 formation and effect of iron carbonyl in, B., 660.
 water-, production of, (P.), B., 134, 260, 439, 537, 711, 757, 982.
 apparatus for, (P.), B., 9, 485.
 plant for, (P.), B., 792.
 from brown coal in Pintsch-Hillebrand generator of Hamburg gas-works, B., 756.
 heavy-oil tar emulsions in, B., 53.
 contact catalysts for, (P.), B., 537.
 and tar, (P.), B., 711.
 tar wash-box for, (P.), B., 10.
 removal of sulphur compounds from, (P.), B., 583.
 recovery of waste heat from, (P.), B., 537.
 carburetted, of, (P.), B., 343, 344.
 synthesis of hydrocarbons from, B., 54.
 synthesis of liquid hydrocarbons from, B., 132.
 pressure synthesis of methyl alcohol from, B., 91.
 synthesis of higher paraffins from, B., 484.
 blue, manufacture of, from bituminous coal, lignite, peat, etc., (P.), B., 10.
 carburetted, manufacture of, (P.), B., 134, 213, 485, 758.
 oils for, B., 259.
 use of heavy oil in, (P.), B., 134.

Gas, water-, carburetted, manufacture of, control of plant for, B., 6.
 generator for, (P.), B., 439.
 use of, as coal-gas auxiliary, B., 708.
 blue, manufacture of, (P.), B., 213.
 high-hydrogen, production of, from younger coal cokes, B., 979.
Gases, laws of, A., 1298.
 production of, in electric arc, B., 660.
 apparatus for, (P.), B., 662.
 apparatus for treatment of, (P.), B., 834, 883.
 purification of, (P.), B., 5, 88, 210, 440, 544, 758, 936, 1077.
 manufacture of granular material for, (P.), B., 1084.
 by expansion, (P.), B., 579.
 by refrigeration, (P.), B., 537.
 wet purification of, (P.), B., 1027.
 apparatus for, (P.), B., 788.
 removal from, of acidic gases, (P.), B., 55.
 of ammonia, (P.), B., 294.
 of ammonia and hydrogen sulphide, (P.), B., 837, 983.
 of carbon dioxide and hydrogen sulphide, (P.), B., 793.
 of carbon disulphide, (P.), B., 891, 1126.
 of dusts, (P.), B., 883.
 apparatus for, (P.), B., 1077.
 by centrifugal separation, (P.), B., 659.
 by electrostatic precipitation, B., 910.
 apparatus for, (P.), B., 813.
 of hydrocyanic acid, (P.), B., 948.
 of hydrogen sulphide, (P.), B., 88.
 with activated charcoal, B., 708.
 of hydrogen sulphide and ammonia, (P.), B., 214.
 of suspended matter, by washing, (P.), B., 210, 755*.
 apparatus for, (P.), B., 533, 611.
 centrifugal apparatus for, (P.), B., 931.
 of suspended particles, by electrical precipitation, (P.), B., 30, 108, 237, 558, 682, 858.
 apparatus for, (P.), B., 67, 316, 363, 415, 462, 911, 1149.
 apparatus for detection of suspended matter in, (P.), B., 533.
 recovery of, from animal and vegetable matter, (P.), B., 793.
 recovery of liquefiable constituents from, (P.), B., 338.
 apparatus for separation of, (P.), B., 834.
 from liquids, (P.), B., 1027.
 washing of, with sludge recovery, (P.), B., 883.
 separator for cleaning of, (P.), B., 5.
 cleaning and drying of, (P.), B., 211.
 filters for, (P.), B., 611, 787, 978.
 filters for removal of suspended matter from, (P.), B., 1027.
 conditioning apparatus for, (P.), B., 659.
 drying of, B., 337.
 scrubbing of, (P.), B., 85, 982.
 with liquids, (P.), B., 533.
 rate of mixing of, in closed containers, B., 578.
 mixing of, with liquids, (P.), B., 290.
 apparatus for treatment of liquids with, (P.), B., 211, 388, 435, 533, 755.
 diffusers for blowing of, into liquids, (P.), B., 435.
 contact apparatus for liquids and, (P.), B., 84, 610, 1076.
 dispersion of, in liquids, B., 834.
 separation of, from liquids, (P.), B., 579.
 apparatus for, (P.), B., 258, 610.
 treatment of, with solids, (P.), B., 1076.
 apparatus for heat treatment of, (P.), B., 482.

Gases, conversion of, at high temperatures, (P.), B., 85.
 unimolecular electron capture in, A., 1439.
 electron diffraction of, A., 153.
 molecular scattering of, A., 425.
 collision excitation of intramolecular vibrations in, A., 155.
 refraction and dispersion of, A., 13.
 absorption of light in, A., 137.
 discontinuities in absorption spectra of, A., 136.
 infra-red spectra and chemical reactivity of, A., 281.
 rotational Raman effect in, A., 281, 564.
 depolarisation of light scattering in, A., 1301.
 current distribution between point cathodes and infinite anodes in glow discharges in, A., 1438.
 electric discharge in, before breakdown, A., 1184.
 with electrolyte as cathode, A., 1184.
 in the cloud chamber, A., 801.
 ionic shell effect in, A., 4.
 electrodeless discharge in, A., 800.
 chemical equilibria in low-pressure discharges in, A., 446.
 ionisation measurements in, at high pressures, A., 275.
 effect of pressure on ionisation current in, A., 283.
 temperature ionisation of, A., 677.
 ionisation of, measured with K_2 line of copper, A., 1046.
 by photons and corpuscular rays, A., 1185.
 by X-rays, A., 682.
 formation of negative ions in, A., 140.
 capture of electrons by positive ions from, A., 274.
 velocity of positive ions in, in the corona discharge, A., 909.
 electrostriction of, A., 12.
 dielectric constants of, A., 567, 916, 1304.
 calculation of entropy of, A., 157.
 determination of thermal conductivity of, (P.), B., 883.
 effect of magnetic fields on passage of heat through, A., 156.
 specific heats of, A., 289.
 at high temperatures, A., 155.
 true and mean, B., 898.
 determination of temperature of, with high-velocity thermocouple, B., 257.
 heat capacity of, A., 21, 690.
 calculation of, at high pressures and temperatures, A., 437.
 heat capacities and dissociation equilibria of, A., 702.
 student's balance for density measurements of, A., 723.
 determination of sp. gr. of, by effusion method, A., 1342.
 measurement of C_p for, A., 690.
 association of, at the b.p., A., 815.
 apparatus for liquefaction of, (P.), B., 388.
 liquefied, apparatus for separation of, (P.), B., 5.
 metering of, (P.), B., 482.
 apparatus for solidification of, (P.), B., 258.
 solidified, luminescence from, A., 12.
 luminescence and crystal structure of, A., 147.
 determination of crystal structure of, A., 839.
 measurement of compressibility of, A., 1099.

Gases, compressibilities and expansion coefficients of, A., 438.
 effect of temperature on viscosity of, A., 1455.
 inner friction of, in a magnetic field, A., 925.
 adsorption isotherms of, A., 441.
 velocity of absorption of, by liquids, A., 41.
 absorption of, in spray towers, B., 530.
 adsorption of, and Nernst's heat laws, A., 696.
 cathode-ray oscillography of, A., 1316.
 by chromic oxide gel, A., 28.
 by glass walls, A., 441.
 on mercury, A., 818.
 by titania gel, A., 1315.
 by soils and their components, B., 1010.
 desorption of, from sooted metal surfaces in vacuum, A., 293.
 electrical clean-up of, at low pressures, A., 4.
 clean-up of, by barium, calcium, and magnesium, A., 27.
 transition of, from dissolved to dispersed state, A., 1067.
 anisotropy of liquids round bubbles of, A., 283.
 diffusion of, A., 692.
 through metals, A., 25, 293, 439.
 mutual diffusion of, at high pressures, A., 692.
 colloidal, A., 699.
 statistics in thermodynamics of, A., 815.
 graphical thermodynamics of, A., 815.
 properties of, and thermodynamic equation of state, A., 22.
 equation of states of monolayers in, A., 1070.
 thermodynamics of equilibria of, A., 823.
 homogeneous equilibria of, calculated from spectroscopic data, A., 301.
 kinetic theory of, A., 1197, 1313.
 absorption of sound in, A., 1062.
 effect of pressure and temperature on supersonic dispersion in, A., 1062.
 supersonic velocity in, A., 572.
 ultrasonic waves in, A., 1062.
 air-surplus coefficient for combustion of, B., 979.
 effect of electric field frequency on velocity of combustion of, A., 708.
 ignition of, A., 1464.
 ignition temperatures of, B., 660.
 prevention of explosions of, by powders, B., 835.
 testing explosibility of, (P.), B., 758.
 quenching of fires of, by an electric field, B., 979.
 activity coefficients of, A., 575, 823.
 activation of, by metals, A., 43.
 at hot metallic surfaces, A., 273.
 reaction chamber for, (P.), B., 753.
 reaction apparatus for liquids and, (P.), B., 5.
 conversion factors for, B., 753.
 removal of, from metals, B., 905.
 device for admission and removal of, from revolving shafts, (P.), B., 482.
 thermostats for control of flow of, (P.), B., 482.
 micrometer inlet tap for, A., 599.
 state of degeneracy of, A., 1076.
 penetration of clays by, B., 1044.
 treatment of materials with, (P.), B., 385.
 determination of pressures of, in the organism, A., 507.
 flame detector for, (P.), B., 616.

Gases, determination in, of naphthalene, B., 580.
 of water vapour, B., 705.
Gases, acidic, recovery of, (P.), B., 992.
 adsorbed, densities of, A., 1457.
 anaesthetic, to plants, insects, and centipedes, A., 1160.
 monatomic, equation of state for, A., 157.
 polyatomic, scattering of X-rays by, A., 686.
 thermal conductivity of, A., 691, 923.
 blast-furnace, purification of, in vortex chambers, B., 1144.
 burner, determination in, of sulphuric acid, B., 492.
 combustible, manufacture of, (P.), B., 134, 792.
 production of, from emulsified fuel, (P.), B., 583.
 and coke, (P.), B., 537.
 purification of, (P.), B., 10, 891.
 removal of olefins from, (P.), B., 88.
 removal of oxygen from, (P.), B., 393.
 determination of flame velocity of, B., 258.
 explosions of, with nitrogen oxides, A., 1081.
 testing of, (P.), B., 10.
 sampling and analysis of entrained matter in, B., 835.
 detector for, (P.), B., 793.
 detection of, (P.), B., 11.
 determination of, in air of uppermost strata of earth, A., 1341.
 combustion, purification of, (P.), B., 214.
 heat developed by, in furnaces, B., 833.
 compressed, physical properties of, A., 1313.
 intensity distribution in Rayleigh lines of, A., 1190.
 use of, as motor fuel, B., 835.
 condensable, adsorption of, (P.), B., 1077.
 corrosive, condensation of, (P.), B., 579.
 action of, on leather, B., 686.
 dissociating, energy constants of, A., 918.
 dry, storage of, in wet holders, B., 932.
 dust-laden, apparatus for humidifying and cooling of, (P.), B., 482.
 Einstein-Bose and Fermi-Dirac, transport in, A., 157.
 electronic, magnetic susceptibility of, A., 4.
 explosive, heat capacity of, A., 155.
 detection of, in air, B., 926.
 flame, spectra and latent energy in, A., 138.
 flue, treatment of, (P.), B., 388, 883.
 cleaning apparatus for, (P.), B., 338, 533.
 removal of smoke and acids from, B., 390.
 separation of sulphur dioxide from, (P.), B., 452.
 analysis of, B., 612.
 hot, purification of, (P.), B., 5.
 by heat exchange, (P.), B., 533.
 ideal, effect of temperature on specific heat of, A., 573.
 energy distribution of, A., 679.
 equation of state for, A., 691.
 industrial, self-defence against, B., 575.
 inert, atomic fragment of short range from, A., 1442.
 band spectra of, A., 135.
 collisions of, with slow electrons, A., 1185.
 ionisation of, by alkali ions, A., 556.
 zero gradient of, A., 9.
 diffusion of volatile materials into, A., 695.

Gases, inert, energy exchange between iodine molecules and, A., 1305.
 energy levels of, A., 1443.
 not essential to life, A., 370.
 inflammable, determination of flame velocities of mixtures of, B., 53.
 ionised, A., 139.
 dielectric constant and conductivity of, A., 430.
 transport phenomena in, A., 9.
 absorption of decimetre waves in, A., 1304.
 from Japanese mineral springs, inert gases in, A., 1219.
 mixed, separation of, (P.), B., 51, 290, 611.
 by rectification, (P.), B., 388.
 separators for, (P.), B., 85.
 purification and separation of, (P.), B., 583.
 apparatus for purification of, (P.), B., 579.
 pressure-volume-temperature relations of, A., 156.
 viscosity, thermal conductivity, and diffusion of, A., 438, 575.
 thermodynamics of adsorption of, A., 1316.
 models of superposition and interpenetration of components of, on surfaces, A., 442.
 ignition temperatures of, B., 933.
 ignition of, by corona discharge, A., 708.
 detonation in, A., 1080.
 flame movements in explosions of, A., 1463.
 explosive, spark ignition of, B., 708.
 low-boiling, separation of, (P.), B., 290.
 low inflammable, spark ignition of, A., 1327.
 analysis of, with Podbielniak distillation column and Shepherd apparatus, B., 612.
 determination of minimal quantities of organic matter in, A., 876.
 determination in, of hydrogen sulphide and water, gravimetrically, B., 628.
 non-permanent, use of McLeod gauge with, A., 1343.
 non-polar, effect of electric field on thermal conductivity of, A., 691, 692.
 noxious, apparatus for detection of, (P.), B., 900.
 paramagnetic, viscosity of, in magnetic field, A., 575.
 effect of magnetic field on thermal conductivity and viscosity of, A., 923.
 catalysis of ortho-para transformation by, A., 1208.
 poisonous, removal of, from workroom atmospheres, B., 430.
 fabrics resistant to, (P.), B., 1041.
 rare, A., 724.
 production of, from air, (P.), B., 1142.
 separation and uses of, B., 305.
 physical properties of, from Clausius virial, A., 691.
 spectra of, A., 272.
 infra-red spectra of, A., 1045.
 effect of foreign gases on conductivity of, A., 12.
 ionisation curves of polonium α -rays in, A., 141.
 properties of, according to thermodynamic equation of state, A., 925.
 influence of, in physiology, A., 895.
 real, properties of, A., 1064, 1198.
 equation of state for, A., 156, 437, 691.
 sewer, determination in, of hydrogen sulphide, B., 656.

- Gases, toxic, effect of, on cell metabolism, A., 398.**
 unsaturated, velocity of absorption of, by sulphuric acid in presence of catalysts, A., 1085.
 viscous compressible, dispersing and condensing tendencies of, A., 1065.
 warfare. See under Warfare, chemical.
 waste, deodorisation of, (P.), B., 704.
 industrial, treatment of, (P.), B., 1122.
- Gas absorption apparatus, A., 599.**
 low-pressure bubbler, A., 723.
 for determination of volatile substances, A., 1436.
- Gas analysis, B., 590, 947.**
 confining liquids for, B., 258.
 in rocks and minerals, A., 52.
 by differential thermal conductivity, (P.), B., 363.
 microchemical, A., 1552.
 photo-electric, (P.), B., 755.
 quantitative spectroscopic, A., 462.
- Gas analysis apparatus, B., 530; (P.), B., 85, 659, 978.**
 small absorption bulbs for, A., 58.
 for blood, A., 507.
 micro-, A., 507, 1476.
 micro-thermal conductivity, A., 320.
 modified Orsat, B., 881.
 pipette, for storage of air-free agents, A., 1218.
- Gas black, use of, in printing ink, B., 734.**
- Gas calorimeters. See under Calorimeters.**
- Gas condensers, prevention of corrosion in, B., 1047.**
- Gas generators, (P.), B., 485.**
 for pulverised fuels, (P.), B., 213.
 laboratory, B., 341.
- Gas-holders, sealing medium for, (P.), B., 439.**
 waterless, sealing liquid for, (P.), B., 1033.
 wet, storage of dry gas in, B., 932.
- Gas mantles, incandescence, (P.), B., 662.**
 Welsbach, theory of, A., 273.
- Gas masks, (P.), B., 480.**
 testing of active charcoal for, B., 832.
 smoke filters for, (P.), B., 5.
 absorption of mercury vapour by, B., 752.
 absorption of water mist in, B., 479.
 disinfection of, with formaldehyde, B., 832.
 influence of expiratory resistance of, on working capacity of wearer, B., 1070.
 industrial, B., 207.
 See also Respirators.
- Gas meters, aluminium-zinc alloys for, (P.), B., 236.**
 tinning of metal shoots for, B., 593.
 testing of paints for, B., 959.
- Gas-mixing apparatus, for p_H measurements of biological liquids, A., 270.**
- Gas oil, combustion of, B., 614.**
 decomposition products of vapour-phase cracking of, B., 886.
 use of, in explosion motors, B., 837.
- Gas producers, (P.), B., 9.**
 rotary firegrates for, (P.), B., 486.
 safety device for, (P.), B., 217.
 for furnaces, (P.), B., 792.
 for motor lorries, B., 1123.
 breeze-burning, B., 340.
 rotating-hearth, gasification of coko in, B., 52.
 Upper Silesian steelworks', B., 52.
- Gas reactions, carrying-out of, (P.), B., 773, 931.**
 apparatus for, (P.), B., 1027.
 heterogeneous catalysis in, A., 711, 1209.
- Gas retorts. See under Retorts.**
- Gas sampling apparatus, A., 840.**
- Gas scrubbers, (P.), B., 85, 388, 611, 1077.**
- Gas washing apparatus, A., 723; (P.), B., 84, 1027, 1122.**
- Gas works, concentration of liquors from, (P.), B., 616.**
 purification of effluents from, B., 336.
 disposal of effluents from, (P.), B., 891.
 oxidation of liquors from, in mixtures with sewage, B., 47.
 production of ammonia in, B., 225.
 small, continuous vertical retorts for, B., 612.
 determination of free sulphur and tar in spent oxide from, B., 535.
- Gasification, theory of, B., 708.**
- Gaskets, composition for, (P.), B., 111.**
- Gasoline, production of, from waste cottonseed oil, B., 179, 887.**
 by polymerisation of cracked gases, B., 757.
 by polymerisation of hydrocarbon mixtures, B., 980.
 by polymerisation of olefines, B., 887.
 recovery of, (P.), B., 296, 486.
 from natural gas, (P.), B., 89, 486.
 purification of, revivification of magnesium hydroxide from, (P.), B., 900.
 refining of, (P.), B., 180, 344.
 Vickers apparatus for, in Grozni, B., 1030.
 use of acid sludge from, B., 1031.
 reclamation of spent doctor solutions from, (P.), B., 983.
 and naphtha, B., 581.
 colouring of, (P.), B., 759.
 removal of corrosive substances from, B., 1031.
 deacidification of, (P.), B., 180.
 decolorisation and desulphurisation of, (P.), B., 295.
 fractionation of, (P.), B., 893, 1128.
 design of fractionating apparatus for, B., 577.
 refining of pressure distillates of, (P.), B., 1083.
 amylene fraction of, B., 1031.
 production of amyl alcohols from, B., 1031.
 production of amyl chlorides from, B., 1031.
 gum inhibitors for, B., 1031; (P.), B., 759.
 gum stability of, B., 1031.
 sweetening of, with alcoholic alkali and sulphur, B., 535.
 absorption of, from gaseous hydrocarbons, B., 392.
 effect of ozone on spontaneous ignition of, B., 935.
 anti-knock compositions for, (P.), B., 759.
 knock characteristics of, and their composition, B., 887.
 mixtures of alcohol and, as aero-engine fuels, B., 293.
 water-tolerance of mixtures of, with ethyl alcohol, isopropyl alcohol, and benzene, B., 86.
 separation of methane hydrocarbons from, B., 133.
 colour-stabilisation of, by amines, B., 888.
 standard test for colour stability of, B., 614.
 effect of mercaptans, alkyl disulphides, and sulphur, on colour-stability of, B., 535.
 corrosion tests with, B., 1031.
 significance of octane number of, B., 212.
 antiknock, (P.), B., 713.
 production of, (P.), B., 295.
 aviation, B., 614.
- Gasoline, from Cherekhov tar, B., 54.**
 cracked, refining of, (P.), B., 617.
 redistillation of, B., 1030.
 heat treatment of, under pressure, B., 1030.
 vapour-phase clay treatment of, B., 886.
 inhibitors in, B., 582.
 inhibitor dyes in, B., 614.
 determination of aromatic hydrocarbons in, B., 342.
 cracked and hydrogenated, B., 1030.
 leaded, colouring of, (P.), B., 1128.
 Maikop, naphthenes in "toluene" fraction of, B., 1031.
 Polish, composition of, B., 133.
 shale, desulphurisation of, by catalytic hydrogenation, B., 86.
 from Kashpira tar, catalytic desulphurisation of, B., 392.
 Shukoko crude, separation of benzene, toluene, and xylene from, B., 179, 392, 535.
 Surakhani, catalytic dehydrogenation of fractions of, B., 1081.
 of primary tars, refining of, B., 54.
 from sapromyxite tar, B., 53.
 from sapropelite tar, composition and stability of, B., 53.
 analysis of, B., 1030.
 determination of, in gases, B., 54.
- Gastric juice, constituents of, A., 1267.**
 pure, composition of, A., 884.
 stimulation of, A., 234.
 effect of histaminase and pancreatin on, A., 512.
 effect of peppermint oil on secretion of, A., 884.
 spectrography of, A., 774.
 acidity of, regulation of, A., 773.
 preparation for, (P.), B., 750.
 effect of acid-base balance on, A., 1005.
 relation of mucus secretion to, A., 512.
 in pyloric closure and stenosis, A., 884.
 acid and mucus in, A., 648.
 acid-base balance of, before and after histamine stimulation, A., 378, 512.
 chloride in, from fundic pouches and from whole stomach, A., 512.
 chlorine content of, A., 106, 1399.
 elimination of dyes in, A., 1006.
 inorganic constituents of, A., 378.
 relation of p_H to pepsin and rennin in, A., 1006.
 mixture of saliva and, A., 512.
 protection of medicaments from action of, (P.), B., 750.
 acid, influence of duodenal secretions on, A., 1399.
 dog's, effect of alkalosis on acidity of, A., 1005.
 mucositisulphuric acid from, A., 773.
 in fasting men, spectrography of, A., 1005.
- Gastric motility, effect of fat on, A., 1407.**
- Gastric mucosa of pig's, enzymes in, A., 1025.**
- Gastric ulcer, secretion of acid and mucus by the stomach in, A., 648.**
 fall of capillary resistance in, in relation to vitamin-C, A., 1011.
 produced by posterior pituitary extracts, A., 902.
- Gastroduodenal ulcer, p_H of gastric juice in cases of, A., 1011.**
- Gastro-intestinal tract, A., 1006.**
 in rats, p_H of, A., 1005.
- Geaster fimbriatus, constituents of, A., 1432.**
- Geiger counter, circuit for pulses of, A., 722.**
 applied to light measurements, A., 676.

- Geiger-Müller counters**, with alkali-metal cathodes, A., 1341.
for diffracted *K* X-rays, A., 1341.
- Geiger-Müller tube**, A., 189.
- Geiger-Nuttall law**, and α -particle spectra, A., 1440.
- Gels**, organic, X-ray analysis of, A., 162.
thixotropic, fluidities of, A., 164.
See also Colloidal gels.
- Gelatin**, structure of, A., 1140.
different forms of, A., 702.
action of radiations on, A., 769.
electrolytic systems with, A., 822, 1079.
potential of metal electrodes in, A., 1462.
distribution of electrolytes on, in an applied electric field, A., 1075.
isoelectric point of, A., 822, 1202.
determination of isoelectric point for surfaces of, A., 933.
deformation of, in electric fields, A., 445.
measurement of p_H in solutions of, A., 1075.
heats of wetting and gelation of, A., 32.
solution and fractionation of, A., 701.
solutions, influence of electrolytes on p_H of, A., 300.
gels, heat capacity of, A., 1202.
of benzoquinone, A., 445.
reaction between gelatin and electrolytes in, A., 300.
isoelectric, A., 164.
swelling of, in heavy water, A., 164.
graphical demonstration of Procter-Wilson equations for, in hydrochloric acid, B., 819.
contraction in, A., 581.
effect of cholesterol and lecithin on, A., 581.
supports for films of, (P.), B., 930.
Vogel test for resisting power of, B., 574.
hydration of, B., 420.
alcoholic hydrolysis of, A., 998.
hydrolysates, isolation of dihydroxy-pyrrolealanine from, A., 876.
methylation and enzymic fission of, A., 630.
action of metal compounds on, B., 864, 1106.
tanning effect of metal compounds on, A., 301.
chrome tanning of, B., 818.
action of aluminium, chromium, and iron salts on, A., 580.
reaction of, with silver ions, A., 702.
photographic activity of, B., 574.
photographic location of radioactive ions in, A., 178.
for photography, B., 783.
for photographic emulsions, B., 1069.
manufacture of capsules for sealing bottles from, B., 446.
marketing of, (P.), B., 645.
action of pancreatin on, A., 252.
utilisation of, by rats, A., 1272.
treatment of muscular dystrophy with, A., 383.
hydrolysed, Jaffé-Folin reaction of, B., 35.
ionised, diffusion potentials and mobilities of, A., 300.
iodine azide test on, B., 1009.
electrometric titration of, in presence of aromatic aldehydes, A., 526.
- Gelatinising substances**, formation of small-particle products from, (P.), B., 420.
- Gelatinous materials**, drying of, (P.), B., 864.
- Gems**, synthetic, (P.), B., 454.
- Genins**, hydrocarbon from dehydrogenation of, A., 481.
- Genistein**, constitution of, A., 985.
- Gentiobiosetrimethylammonium bromide heptaacetate**, A., 330.
- Geochemistry**, review of, A., 840.
- Geology**, measurement of time in, A., 843.
and clay research, B., 1009.
of the Aspen district, Colorado, A., 955.
- Geranic acid**, *p*-bromophenacyl and *p*-phenylphenacyl esters, B., 573.
- Geraniol**, formation of, from linalool, A., 983.
isomerides of, A., 605.
- Germane**. See Germanium tetrahydride.
- Germanes**, substituted, hydrogen bromide cleavage of, A., 1139.
- Germanin**, action of, on diuresis, A., 781.
- Germanite**, extraction of gallium and germanium from, A., 1470.
- Germanium isotopes**, A., 6.
from Northumberland coal ash, A., 716.
extraction of, from germanite, A., 1470.
absorption of, by plants, A., 552.
- Germanium compounds**, with nitrogen, A., 51.
- Germanium bromides**, Raman spectra of, A., 1053.
tetrachloride, molecular structure of, A., 812.
dielectric properties of, A., 13.
tetrahydride, absorption spectrum of, A., 561.
iodides, complex, A., 1089.
nitride, A., 51.
monoxide, emission band spectrum of, A., 9.
dioxide, vitreous, atomic arrangement in, A., 1451.
- Germanic acid**, reactions of, A., 1095.
- Germanium organic compounds** :—
*Germanium di-*m*-tolyl dibromide*, tri-*p*-tolyl chloride, and tolyl tritolyls, A., 1139.
Tetrathio-orthogermanic acid, radial esters of, A., 1111.
- Germanium detection and determination** :—
detection of, with drop reaction, A., 1095.
in presence of arsenic, A., 56.
in blende, A., 838.
determination of, spectrographically, A., 1095.
in Brazilian meteorites, A., 1099.
in organic compounds, A., 369.
- Germanoformic acid**, action of sodium and potassium hydroxides on, A., 61.
- Germicides**, manufacture of, (P.), B., 46, 174, 254*, 288, 752, 841, 974.
from cashew nutshells, (P.), B., 128.
action of chlorine as, B., 128, 255.
 α -alkylated furoic acids as, B., 1024.
for bandages, dressings, etc., (P.), B., 877.
resistance of bacteria and embryonic tissue to, A., 1421.
o-tolidine and iodometric determination of available chlorine in, B., 528.
- Germinators**, electrically-heated, A., 465.
- n*- and *iso*-**Geronic acids**, 2:4-dinitrophenylhydrazones of, A., 743.
- Geysers**, Yellowstone Park, magmatic emanations in, A., 468.
- Ghee**. See Butter fat, Indian.
- Gibbs-Thompson law**, A., 925.
- Gila monster**, properties of blood of, A., 999.
- Ginkgo biloba**, constituents of fruit of, A., 615.
- Ginkgolic acid**, methyl ester, methyl ether, A., 615.
- Ginorite** from Sasso Pisano, A., 601.
- Gitogenic acid**, methyl esters and anhydride of, A., 1130.
- Gitogenin**, conversion of, into an identical derivative, A., 986.
- Gladibolus**, shortening rest period of small corns and cornels of, B., 1110.
storage of corns of, B., 326.
control of thrips in, with derris, nicotine, Paris-green, etc., B., 39.
- Glands**, manufacture of therapeutic preparations of, (P.), B., 829.
isolation of extracts of, (P.), B., 1166.
embryonal, manufacture of physiologically active preparations from, (P.), B., 287.
endocrine, glutathione in, A., 645.
effect of, on calcium metabolism, A., 258.
effect of transplantation of, on blood-sugar, A., 1142.
lactal. See Mammary glands.
- Glass**, constitution of, A., 704; B., 148.
optics of, A., 1189.
constitution and optical properties of, and of solutions, A., 1200.
constitution and volatilisation of, B., 725.
control of composition of, (P.), B., 23.
formation of, A., 285.
manufacture of, (P.), B., 902.
from blast-furnace slag, B., 453, 495.
with salt, (P.), B., 546.
corrosion of crucibles for, B., 849.
plant for, (P.), B., 1143.
tanks for, (P.), B., 454.
effect of water vapour on rate of reactions in, B., 22.
fused preparation for, (P.), B., 1044.
melt properties of raw materials for, B., 629.
free alkali in, B., 227.
use of Karabugaz sulphate in, B., 495.
effect of selenium in, B., 545.
influence of constituents on colour of, B., 496.
colouring agents for, (P.), B., 101, 949.
coloration of, by copper, selenium, and sulphur, B., 22.
kinetics of, by X-rays, A., 1469.
influence of carbon in sand on, with selenium, B., 1093.
decolorisation of, with selenium and arsenious oxide, B., 404.
influence of ammonium sulphate on amount of selenium for, B., 803.
use of grey cast iron for moulds for, B., 673.
rate of setting of, during working, B., 404.
temperature of sintering of, B., 22.
tempering of, (P.), B., 1143.
toughening of, (P.), B., 804.
mechanical properties of, B., 307.
effect of alumina on, B., 453.
chemical durability of, B., 629.
durability of, in service, B., 405.
strength of, B., 1142.
variation in, B., 100.
breaking strength of, B., 100.
strain in, at glass-metal seals, B., 1142.
effects of heat-treatment on seals between metals and, B., 901.
elastic constants of, A., 1219.
effect of temperature on modulus of elasticity of, B., 992.
physical properties of, B., 673.
inequalities of refractive index in interior of, B., 725.
absorption coefficients of, in ultra-red, B., 674.
transmission of ultra-violet light by, A., 279, 561.
action of soft X-rays on, B., 591.

Glass, ring deposits on, by positive-ray bombardment, A., 1469.
 radiochemical determination of surface of, B., 591.
 electrokinetic potentials at fused and unfused surfaces of, A., 1460.
 electrolytic transport of gases and alkali metals through, A., 705.
 transport of electricity through molten metals and salts on, A., 1071.
 electro-dialysis of, B., 901.
 determination of isoelectric point for surfaces of, A., 933.
 effect of heat treatment on coefficient of expansion of, B., 674.
 effect of lithium oxide on thermal expansion of, B., 767.
 differences in thermal expansion coefficients of, B., 453.
 melting of, electrical apparatus for, (P.), B., 804.
 use of cyanite in crucibles for, B., 1142.
 furnaces of, (P.), B., 631, 804, 851, 902.
 electric furnaces for, (P.), B., 682.
 induction furnaces for, (P.), B., 507.
 tank for, (P.), B., 1094.
 recuperative tanks for, (P.), B., 149.
 acceleration of, B., 495.
 with potash containing phosphates, B., 673.
 influence of carbon dioxide on, B., 849.
 molten, viscosity of, and Le Chatelier's formula, B., 61, 453.
 viscosity and conductivity of, A., 157; B., 149.
 study of separations in, by electrical conductivity, B., 629.
 aggregation and transformation points of, B., 544.
 adsorption of gases by, A., 441.
 velocity of adsorption of nitrogen oxides by, A., 587.
 crystal growth in, B., 900.
 ultrasonic waves in, A., 1312.
 production of electrically conducting coatings on, (P.), B., 902.
 etching of, (P.), B., 804.
 silvering of, (P.), B., 949.
 devitrification of, B., 900.
 action of molten lithium salts on, A., 713.
 action of steam on, B., 901.
 wetting of, by water, A., 29.
 loss of hydrogen atoms from water-poisoned surfaces of, A., 1069.
 reactions of water adsorbed on, A., 1069.
 adhesives for, (P.), B., 1059.
 simple connection of, A., 599.
 joining of, to ceramic materials, (P.), B., 496.
 to metal, (P.), B., 406.
 iron-cobalt-nickel alloys for sealing into, (P.), B., 106.
 sealing of metals to, A., 1477; B., 803.
 action of, on refractory building materials, B., 545.
 production of fibres, threads, etc., from, (P.), B., 591.
 manufacture of filters of, (P.), B., 307.
 manufacture of foraminous masses from, (P.), B., 454.
 for stems and flares of electric lamps, (P.), B., 546.
 for metal-vapour lamps, (P.), B., 902.
 for spectacles, absorption of ultra-violet light by, B., 992.
 use of, in artificial teeth, B., 227.
 for double windows, (P.), B., 23.
 substitutes, manufacture of, (P.), B., 1103.

Glass substitutes, flexible, (P.), B., 195.
 action of substances dissolved from, on cell cultures, A., 409.
 analysis of, B., 405, 496.
 identification of splinters of, A., 270.
 determination in, of ferrous iron, B., 591, 850.
Glass, alkali-lime-silica, attack of, by water, B., 404.
 containing lithia, soda, potash, and rubidia, properties of, B., 404.
 containing soda and potash, rate of melting and refining of, B., 404.
 alumina-silica-soda, refractive index, density, and thermal expansion of, B., 767.
 beryllium, chemical and physical properties of, B., 404.
 Bohemian and bottle, use of sodium sulphate in, B., 495.
 borosilicate, effect of zirconia on chemical durability of, B., 992.
 pulmonary lesions caused by, A., 896.
 heat-resisting, (P.), B., 101.
 case-hardened, manufacture of, (P.), B., 101.
 cellular, manufacture of, (P.), B., 949.
 containing coloured streaks, manufacture of, (P.), B., 271.
 colourless, specification of sands for, B., 496.
 composite, manufacture of, (P.), B., 23.
 cream-coloured opaque, (P.), B., 674.
 Fourcault, composition of, B., 22.
 germanium dioxide and silica, atomic arrangement in, A., 1451.
 Jena, for thermometers, thermal expansion of, A., 21.
 laminated, (P.), B., 101*.
 manufacture of, (P.), B., 101, 725, 851, 902, 949, 1044.
 grooving of, (P.), B., 546.
 interlayers for, (P.), B., 228.
 lead crystal, brilliance of, B., 850.
 Lovibond red, adjustment of, A., 1097.
 luminescent, production of, (P.), B., 149.
 manganese-free, violet colour of, A., 282.
 optical, history of, B., 355.
 determination in, of chromium, spectrographically, B., 803.
 plate, chilled, mechanical properties of, B., 187.
 potash-lead-silicate, devitrification constants of, along the lead-glass line, B., 850.
 pyrex, aëration tubes for, A., 58.
 annealing of, B., 948.
 quartz, insulating power of, A., 683.
 refractory, (P.), B., 496.
 safety, manufacture of, (P.), B., 725, 851, 1044.
 compound for interlayers of, (P.), B., 93, 195.
 non-glare, (P.), B., 1095.
 selenium red, use of, as ceramic colour, B., 591.
 sheet, differentiation of method of production of, B., 674.
 anisotropy and structure of, B., 307.
 annealing of, (P.), B., 23.
 tempering of, (P.), B., 1044.
 soda, formation of sulphates in, B., 404.
 soda-alumina-silica, transformation temperature and thermal expansion of, A., 36.
 soda-lime, influence of zirconia on elasticity of, B., 992.
 soda-lime-silica, reactions in formation of, B., 404.
 selenium decolorisation of, B., 496.

Glass, soda-lime-silica, volatility of, B., 850.
 reduction of alkalinity of, by dissolved carbon dioxide, B., 21.
 soda-silica, X-ray structure of, A., 1308.
 β - and γ -ray coloration of, A., 282.
 sodium borate, electrical conductivity of, A., 567.
 surface-decorated, production of, (P.), B., 149.
 toughened, manufacture of, (P.), B., 307.
 ultra-violet transparent, production of, (P.), B., 406, 1143.
 unannealed, variation of refractive index of, B., 992.
 uranium, constitution and colour of, B., 404.
 window, determination in, of iron and titanium, B., 61.
Glass apparatus, A., 189.
 removal of tar or pitch from, B., 131.
 articles, moulded, influence of mould on strength of, B., 673.
 bottles, manufacture of, B., 307.
 influence of temperature on bursting pressure of, B., 100.
 standard test for chemical durability of, B., 850.
 bulbs, matt, etching of, B., 591.
 containers, testing of chemical durability of, B., 629.
 discs, sintered, use of, in distillation, A., 599.
 plates, hardened, manufacture of, (P.), B., 950.
 sintered, for filters, A., 467.
 rods, effect of temperature on tensile strength of, B., 1142.
 tanks, materials for, B., 767.
 refractory bricks for, (P.), B., 188.
 water-jackets for, B., 767.
 tubes, clamping of, A., 723.
 vessels, cleaning of, A., 466.
 ware, manufacture of, (P.), B., 851.
 kilns for, (P.), B., 385.
 annealing of, (P.), B., 631, 902.
 lehrs for, (P.), B., 228, 1044, 1095.
 substitution of enamelled iron vessels for, B., 591.
 time factor in testing of, B., 767.
 wool, production of, (P.), B., 902.
 works, creosote fuel for use in, B., 484.
 Druzhnaya Gorka, albite from, A., 60.
Glauco-bilin, tetrabromo-, hydrobromide, A., 994.
Glaucoma, swelling of vitreous humour as cause of pressure in, A., 232.
 effect of cortin on intra-ocular tension in, A., 1149.
Glaucoma pyriformis, biochemical reactions with washed cells of, A., 1419.
Glauconic acid, constitution of, A., 1224.
Glauconin, and its silver salt and derivatives, A., 1224.
Glauconite, treatment of, (P.), B., 948.
 Dnicpropetrosk, properties of, A., 1221.
Glazes, (P.), B., 23.
 crazing and peeling of, B., 405.
 durability of, in service, B., 405.
 standardisation of tests for, B., 406.
 colouring materials for, (P.), B., 101.
 underglaze colours for, B., 356.
 coloured, chemistry of, B., 674.
 conc-10 raw crystal, B., 149.
 lead, production of, B., 674.
 leadless, for low temperatures, B., 767.
 salt, B., 187.
Gleditschia triacanthos, active principles of, A., 394.

- Gliadin**, constitution of, A., 876.
adsorption of, at glass-liquid surfaces, A., 698.
on quartz, A., 30.
cataphoresis of, A., 30.
- Globin**, hæmaffinic groups of, A., 878.
picate, A., 879.
- Globulin**, placental, measles prophylaxis with, A., 1395.
seed, structure and denaturation of, A., 1433.
serum, osmotic pressure and mol. wt. of, A., 374.
flocculation reactions of, in paludism, A., 650.
determination of, in serum and urine by the biuret method, A., 508.
- ψ -**Globulins**, relation of, to superflocculation of serum, A., 776.
- Gloss**, device for measurement of, (P.), B., 1077.
- Glossmeters**, Oxford, B., 753.
- Glucazidone**, and hydroxy-, A., 1381.
- Glucazidone**, 3-hydroxy-, and its salts and derivatives, and 10-hydroxy-, A., 1382.
- Glucocaffeic acid**, A., 489.
- α -**Glucoheptonic acid**, calcium salt, A., 732.
- β -**Glucoheptose**, and its mutarotation, A., 200.
reaction of, with calcium hydroxide, A., 69.
- d -**Glucoheptosemethylamic acid**, A., 1486.
- Gluconic acid**, formation of, by fermentation, A., 1166.
production of, by fermentation, (P.), B., 121.
by aerobic fermentation of sugar, B., 1065.
crystallisation of, (P.), B., 1130.
calcium salt, manufacture of stable solutions of, (P.), B., 991.
mixture of acetylsalicylic acid and, (P.), B., 749.
as a local anæsthetic, A., 655.
therapeutical preparations from, (P.), B., 1069.
- detection and determination of, A., 732.
- d -**Gluconic acid**, thermochemistry of, A., 37.
barium salt, reaction of, with barium hydroxide, A., 327.
- d -**Glucosaccharosonic acid**, A., 608.
- Glucosamine**, structure of, A., 1228.
deamination of, A., 849.
enzyme hydrolysing, and its fate in the body, A., 111.
enzymic decomposition of, A., 402.
- Glucose**, manufacture of, B., 1064.
removal of proteins from, with fuller's earth gels, B., 283.
influence of heavy water on mutarotation of, A., 309.
influence of light on oxidation-reduction potential of, A., 38.
supercooled, viscosity of, A., 290.
decomposition of solutions of, A., 734.
equilibrium of, with potassium chloride, A., 166.
oxidation of, by cupric oxide, in presence of sodium phosphate, A., 329.
physical chemistry of reducing action of, A., 1083.
transformation of, into galactose and gulose, A., 963.
derivatives, reactions of dichloroacetyl group in, A., 1225.
conversion of, into altrose derivatives, A., 1225.
- 2:3:4:6-**tetraacetate** 1-bromoacetate and 1-iodoacetate, A., 1108.
- Glucose pentaacetate**, dielectric constants of, in benzene and in chloroform, A., 701.
diffusion of, in organic liquids, A., 1072.
benzoates, and their derivatives, A., 199.
phenylosazone, constitution and methylation of, A., 1484.
2:3:6-tri-*p*-toluenesulphonate, synthesis of, A., 68.
formation of acetol from, A., 734.
production of colouring matter from, B., 568.
synthesis of mannocarolose from, by *Penicillium Charlesii*, A., 477.
fermentation of, by *Bacillus coli*, A., 1282.
by butyric acid anaerobes, A., 1167.
by streptococci, effect of sodium salicylate on, A., 125.
by yeast, A., 1538.
by zymase, and degradation of glycogen in muscle, A., 1408.
nutritive values of sucrose and, A., 654.
formation of fat from, A., 1273.
by moulds, A., 662.
effect on blood- and urine-sugar of administration of, A., 110.
distribution of, in blood, A., 1392.
permeability of red blood-corpuscles to, A., 1391.
effect of administration of, on blood-sugar, A., 1016.
effect of intravenous injection of, on lactic acid in blood and urine, A., 778.
effect of diet of, on fluid balance in the body, A., 1404.
effect of injection of, on serum-phosphate, A., 521.
tolerance of, and glycogen storage in dogs, A., 111.
tolerance curve of, A., 515.
influence of liver and pancreas on, A., 383.
intravenous assimilation of, in dogs, A., 777.
absorption of, effect of p_H on, A., 522.
by intestines, A., 522, 540, 892.
by organs, A., 240.
excretion of, by rabbits' kidneys, A., 1268.
glycogenic and ketolytic action of, and its intermediates, A., 522.
induction of glycolysis of, A., 659.
utilisation of, in eviscerated rabbits, A., 1409.
anhydrous, manufacture of, (P.), B., 1064.
xanthate reaction of, A., 1354.
determination of, A., 329.
alkalimetrically, A., 1108.
in presence of disaccharides, A., 1484.
and fructose in mixed solutions, A., 133.
in fruits, A., 240.
in urine, A., 106, 1525.
true, determination of, A., 674, 1392.
- Glucose**, 1-bromo-, 2:3:6-triacetate 4-*p*-toluenesulphonate, A., 1107.
- d -**Glucose**. See Dextrose.
- 1- α -**Glucose** 2:3:4:6-tetraacetate 1- α -iodo-isohexoate, A., 1108.
- Glucose syrup**, dry product from, (P.), B., 119.
- Glucosebenzylmercaptal**, 6-benzoyl derivative, A., 1354.
- d -**Glucosemethylamic acid**, A., 1486.
- Glucosemethylmercaptal**, 6-benzoyl derivative, A., 1354.
- Glucosides**, characterisation of, by acid hydrolysis, A., 1355.
hæmolysis by, A., 1519.
cardiac, A., 330, 609, 754, 1355, 1416.
determination of, step-photometrically, A., 1531.
- Glucosides**, cardiotonic, pharmacology of, A., 1531.
of higher aliphatic alcohols, production of, (P.), B., 649.
- α -**Glucosides**, enzymic synthesis of, A., 1485.
- β -**Glucosides**, synthesis of, A., 1485.
- β - d -**Glucosidodihydroferulic acid**, and its tetra-acetyl derivative, A., 477.
- β -1- d -**Glucosido-*d*-glucose**, synthesis of derivatives of, A., 200.
- Glucosidodihydroxyacetone pentaacetate**, and its *p*-nitrophenylhydrazone, A., 477.
- Glucosulphatase**, A., 659.
- Glucosylketimines**, A., 1108.
- Glue**, production of, (P.), B., 115.
from hides, influence of p_H on, B., 564.
from hides without liming, B., 1008.
from starch, (P.), B., 864.
treatment of, (P.), B., 470.
drying of, (P.), B., 864.
prevention of foaming of, on boiling, (P.), B., 686.
waterproofing of, (P.), B., 371.
films, manufacture of, (P.), B., 115.
preservative for, (P.), B., 513.
use of, (P.), B., 513.
in rubber mixtures, B., 113.
for glass, wood, etc., (P.), B., 1059.
marketing of, (P.), B., 645.
albumin-cascin, for veneer, etc., B., 592.
bone, use of, as source of nitrogen for yeast, B., 76.
sizing of rayon with, B., 1140.
vegetable, for painting and papering, B., 864.
vegetable protein, (P.), B., 864.
- Glutaconic acids**, A., 66.
- Glutamic acid**, formation of, from proline in kidneys, A., 1272.
- d -**Glutamic acid**, preparation of, A., 70.
separation of, without racemisation, (P.), B., 840.
hydrochloride, preparation of, B., 872.
- Glutamine**, preparation of, A., 850.
synthesis of, and its enzymic hydrolysis, A., 1272.
- Glutamino peptides**, A., 404.
- d -**Glutaminy-*d*-glutamic acid**, A., 404.
- d -**Glutaminyglycine**, A., 404.
- l -**Glutaminy- α -glycine**, ethyl ester, A., 1416.
- d -**Glutaminyglycylglycine**, A., 404.
- γ -**Glutamylcysteine**, A., 1111.
- Glutardinitrile**, condensation of, with resorcinol and phloroglucinol, A., 1372.
- Glutaric acid**, di- β -acetoxyethyl ester, A., 327.
p-nitrobenzyl ester, A., 81.
- Glutaric acid**, trihydroxy-, preparation of, from xylose, A., 327.
methylation of, with diazomethane, A., 196.
- Glutaric acids**, $\beta\beta$ -substituted, esters, physical properties and chemical constitution of, A., 65.
- Glutaryl chloride**, structure of, A., 961.
- Glutathione**, A., 1392.
synthesis of, A., 1110.
effect of X-rays on, A., 1212.
redox potential of, A., 1265.
reduction of, by enzyme-co-enzyme system, A., 249.
abnormal reactions of, A., 202.
autolysis of, A., 1163.
action of, on cytochrome-C, A., 1538.
with methylglyoxal, A., 476.
benzenesulphonyl derivative, A., 101.
isolation of *S*-benzylcysteinylglycine and cystinylglycine from, A., 1486.
biochemical relations between ascorbic acid and, A., 1286.

- Glutathione**, antityrosinase function of, *in vitro*, A., 1537.
 effect of, in cyanide poisoning, A., 247.
 activation of glyoxalase by, A., 1536.
 rôle of, in muscle glycolysis, A., 1278.
 effect of pituitary growth hormone on concentration of, A., 1031.
 in cold-blooded animals, effect of temperature of, A., 1521.
 in blood at high altitudes, A., 529.
 in children, A., 508.
 effect of water-soluble heavy metals salts on, A., 398.
 in gestation, A., 518.
 in endocrine glands, A., 645.
 in hen's eggs, A., 1265.
 in liver and muscle after injection of pituitary growth-hormone, A., 1424.
 in muscle in relation to exercise, A., 645.
 effect of sulphur mineral water on content of, in organs, A., 646.
 in tissues, influence of bromobenzene on, A., 1159.
 effect of starvation on, A., 1153.
 of normal and tumour-bearing rats, A., 1401.
 in-growing tissues, A., 417.
 rôle of, in living tissues, A., 389.
 reduced, effect of internal secretions and of pituitary on, in blood, A., 543.
 effect of hormones on, in blood and tissues, A., 540.
 in thymus and testicles of rabbits, A., 511.
 determination of, in tissues, A., 105, 772.
 determination of, with glyoxalase, A., 784.
 in tissues, A., 511, 793, 1153.
- Gluten**, size of particles of, in wheat, B., 921.
 fractionation of, dispersed in sodium salicylate solution, A., 769.
 viscosity of dispersions of, A., 580, 701.
 hydrolysis of, B., 872.
 induced by solvents, A., 701.
 wheat, synthesis of, B., 377.
 gliadin-glutenin ratio in, B., 204.
- Glycæmia**, effect of sodium hydrogen carbonate on, A., 1534.
- Glyceraldehyde**, oxidation of, A., 241.
 formation of methylglyoxal from, A., 67.
 decarboxylation of mesoxalic acid by, A., 1106.
- r-Glyceraldehyde**, resolution of, A., 67.
- Glyceraldehydophosphoric acid**, enzymic conversion of, into dihydroxyacetone-phosphoric acid, A., 1164.
- Glyceric acid**, barium salt, reaction of, with barium hydroxide, A., 327.
 lead salt, in litharge-glycerol cement, B., 851.
- Glycerides**, rate of formation of, in hydrogenation of natural fats, B., 1053.
 synthesis of, A., 326.
 from triphenylmethyl compounds, A., 1481.
 manufacture of, (P.), B., 139, 194.
 hydrolysis of, (P.), B., 814.
 substitution of fatty acids for, in diet, A., 1015.
- Glycerol**, manufacture of, (P.), B., 795.
 and soap, (P.), B., 276.
 processing of lyes from, (P.), B., 733.
 band spectrum of, A., 280.
 X-ray diffraction of films of, A., 18.
 nitration of, (P.), B., 761.
 action of radon on aqueous solutions of, A., 1469.
- Glycerol**, condensation of, with aromatic compounds, A., 81.
 formation of benzanthrone by reaction of, with anthraquinone, A., 215.
 reaction of, with diazomesitylenesulphonic acid, A., 338.
 compounds of, with sulphate and chloride, A., 325.
 manufacture of acetol from, (P.), B., 664.
 benzyl ethers, A., 1481.
 chlorohydrins, alkaline hydrolysis of, A., 605.
trichlorohydrin, preparation of, from propylene chloride, A., 959.
 ethers, manufacture of, (P.), B., 262, 1130.
 α-ethers, preparation of hydroxy-aldehyde ethers by oxidation of, A., 1362.
 nitrate, determination of, in air, B., 47.
 phthalate, (P.), B., 762.
 analysis of, B., 639.
 detection of, A., 370.
 determination of, in presence of sugars, by periodic acid, A., 605.
- Glycerophosphates**, antirachitic activity of methyl phosphates, lecithin, and, A., 238.
- α- and β-Glycerophosphates**, degradation of, by fresh yeast and its enzymes, A., 1026.
 enzymic determination of, in their mixtures, A., 660.
- Glycerophosphoric acid** from fluoride-poisoned muscle, A., 250.
 calcium salt, A., 1105.
 sodium salt, determination of, A., 1105.
- α- and β-Glycerophosphoric acids**, influence of p_H on hydrolysis of, by grain phosphatases, A., 122.
 methyl esters, interconversion and hydrolysis of, A., 471.
- "**Glychrogel**" mounting solution, A., 378.
- Glycidamides**. See αβ-Oxidopropionamides.
- Glycine**, production of, in benzoic acid poisoning, A., 395.
 conductivity of aqueous solutions of, A., 584.
 specific heat of solutions of, A., 304.
 photochemical decomposition of, A., 178.
 action of, on potassium platinichloride, A., 1110.
 salts, A., 1486.
 complex metal salts, and their specificity, A., 737.
 alkyl esters, manufacture of primary phosphates of, (P.), B., 840.
 benzenesulphonyl derivative, butyl ester, A., 101.
 cresolsulphonates and phenylsulphonate, A., 970.
 effect of administration of, on blood and urine, A., 389.
 influence of, on excretion of creatine and creatinine, A., 1407.
 effect of injection of, on gastric motility, A., 1020.
 treatment of muscular dystrophy with, A., 383.
 perfusion of intestines with, A., 112.
 elimination of, in rabbits, after injection of BCG, A., 1170.
 terminal, detection of free amino-group of, A., 638.
 determination of, colorimetrically, in proteins, A., 370.
- Glycinin**, from soya beans, action of superheated water on, A., 638.
- Glycocholic acid**, A., 1237.
- Glycocyanine**, extraction of, from urine, A., 379.
- Glycogen** sols, coacervate, A., 701.
 adsorption and hydrolysis of, A., 697.
 hydrolysis of, A., 1110.
 by liver and muscle extracts, A., 533.
 phosphorylation of, A., 1538.
 state of, in cells, A., 1523.
 storage of, and glucose tolerance in dogs, A., 111.
 effect of low pressure on, in rats, A., 777.
 in cartilage, A., 1264.
 content of, in embryonic central nervous system, A., 1397.
 in heart, A., 521.
 in liver, A., 232, 1265.
 formation of, A., 891.
 effect of adenylic and cholic acids on, A., 1151.
 from glucose and its derivatives, A., 645.
 effect of hepatic denervation on, A., 243.
 after feeding with glucose, iodine, and thyroid, A., 900.
 effect of crystalline insulin on, A., 901.
 in liver and muscle at high altitudes, A., 529.
 degradation of, after administration of adenylypyrophosphoric and cholic acids, A., 111.
 changes of, in fetal liver and liver of new-born infants, A., 240.
 break down of, in fish-liver and -muscle, A., 658.
 in fish and rabbit livers, A., 1144.
 in rabbit's liver, effect of incretin on, A., 1172.
 in muscle, state of, A., 1004.
 regulation of, by nervous system, A., 1408.
 degradation of, A., 249, 1408.
 effect of diet on distribution of, in rat's muscle, A., 111.
 distribution of, in nasal polypus, A., 237.
 in neoplasma, A., 1397.
 of placenta, and its distribution in pregnancy, A., 1004.
 autolysis of, A., 122.
 in snails, A., 232.
 in urine, A., 106.
- Glycols**, synthesis of, A., 963.
 manufacture of, (P.), B., 795.
 and their derivatives, purification of, (P.), B., 761.
 elimination of two hydroxyl groups from, A., 1504.
 reaction products of boric acid and, (P.), B., 138.
 ethers, manufacture of, for use as solvents, (P.), B., 618.
 preservation of, (P.), B., 487.
- α-Glycols**, cyclic, dehydration of, A., 340.
- Glycollic acid**, dissociation constant of, in sodium chloride solutions, A., 166.
 calcium salt, gelation of sugar solutions with, B., 40.
 hetero-salts, A., 196.
- Glycol-lignin**, and its derivatives, A., 1373.
- Glycollybiuret**, A., 360.
- Glycollyldicarbamide**, A., 360.
- Glycolmethylamide**, A., 762.
- Glycolysis**, activators of, A., 1278.
 activation of, by heat-inactivated co-enzyme, A., 1162.
 inhibition of, A., 775.
 in blood, A., 1001.
 in brain tissue, A., 402.
 in growth and metabolism of cells, A., 777.
 in muscle, A., 250.
 in striated muscle, A., 251.

- Glycolysis**, in yeast, action of fluoride on, A., 251.
anaerobic, in kidneys, A., 251.
pulmonary, in normal and depancreatised dogs, A., 777.
- Glycophosphates**, antirachitic activity of, A., 238.
- Glycosides**, basic, preparation and enzymic fission of, A., 201.
nitrogenous, A., 69.
- Glycosuria**. See Diabetes.
- Glycuronic acid**, methyl ester, *p*-nitrobenzyl-glucoside of, A., 1483.
derivatives, A., 1352, 1483.
determination of, by Bertrand's method, A., 328.
- Glycuronic acids**, conjugated, synthesis of, during fasting, A., 1530.
fate of, in the body, A., 1151.
- Glycuronides**, synthesis of, A., 1352.
- β -Glucuronides**, synthesis of, A., 1483.
- β -Glucuronosidase**, A., 402.
- Glycyl-*dl*-alanine**, benzenesulphonyl derivative, butyl ester, A., 101.
- Glycyl- α -aminotricarballylic acid**, dissociation constant of, A., 1203.
- Glycylglutamic acid-diketopiperazine**, A., 1416.
- Glycyl-*l*-glutamyl- α -glycine**, and its ethyl ester, A., 1416.
- Glycylglycinamide glucoside**, and its pentaacetate, A., 332.
- Glycylglycine**, hydrolysis of, by hydrochloric acid, A., 587.
and its ethyl ester, derivatives of, A., 332.
- Glycyl-*l*-leucine**, benzenesulphonyl derivative, butyl ester, A., 101.
- Glycyl-*l*-leucylglycine**, A., 1416.
- α -Glycyl-*l*-lysine**, methyl ester dihydrochloride, A., 1417.
- N*-Glycyl-3-nitrotyrosine**, A., 1123.
- 9-Glycyl-1:2:3:4:5:6:7:8-octahydrophenanthrene**, and its derivatives, A., 973.
- Glycylphenylglycines**, and their derivatives, A., 332.
- Glycyl-*dl*-seryl anhydride**, A., 1014.
- Glyoxal**, A., 733, 1353.
gaseous, decomposition of, A., 827.
oxidation of, A., 1327.
additive compounds of, with aromatic amidines, A., 1133.
diethylacetal and semiacetal, A., 733.
di-(*m*-nitrobenzhydrazide) and di-(2:4-dinitrophenylhydrazide), A., 743.
semiacetal, syntheses with, A., 1353.
- Glyoxalase**, A., 784, 1026.
activation of, by glutathione, A., 1536.
dry, production and properties of, A., 1026.
- Glyoxalbis-2:4-dinitrophenylhydrazone**, chloro-, and its acetyl derivative, A., 969.
- Glyoxalinæmia**, parenteral, A., 107.
- Glyoxaline derivatives**, synthesis of, A., 1380, 1507.
in spinal fluids, A., 107.
titration constants of, A., 703.
determination of, in biological material, A., 422.
purine derivatives, A., 503.
flavinate, A., 639.
excretion of, A., 389.
- Glyoxalines**, retention of, in cardio-renal conditions, A., 107.
hydropigemic action of, A., 656.
toxicity of, A., 656.
- Glyoxaline-5-carboxylic acid**, A., 759.
- 5-Glyoxalylglyoxylic acid**, potassium salt and nitrate, A., 759.
- Glyoximes**, magnetic moments of, A., 684.
- Glyoxylic acid**, hydrazones and semicarbazones of, and their use in Hopkins-Cole reaction, A., 65.
detection of, A., 370.
- Glyoxylic acid**, α -amino-, and α -bromo-, ethyl esters, nitro- and bromonitro-ethylhydrazones, A., 502.
 α -amino-, α -bromo-, and α -chloro-, ethyl esters, bromo-, chloro-, and chlorobromo-phenylhydrazones of, A., 1231.
 α -amino-, α -bromo-, and α -chloro-, ethyl esters, 2:4-dinitrophenylhydrazones, and α -chloro-, *p*-iodophenylhydrazones, A., 206.
- Gmelin reaction**, A., 994.
- Goats**, feeding of, with rhubarb leaves, B., 972.
foetal, respiration in, A., 878.
- Goat skins**. See under Skins.
- Gobius melanostomus***, composition of, A., 1005.
- Goethite**, A., 919, 946.
- Goitre**, effect of ascorbic acid on, A., 669.
action of iodine in, A., 889.
iodine deficiency in, A., 384.
iodine metabolism and thyroxine content in, A., 1009.
effect of iodine and desiccated thyroid on anterior pituitary in, A., 1423.
ash of thyroid in relation to, A., 1527.
exophthalmic, A., 1148.
basal metabolism and impedance angle in, A., 108.
hyperthyroxinæmia in, A., 108.
iodine treatment in, A., 649.
exophthalmic and toxic, blood-iodine in, A., 888.
experimental, after injection of folliculin, A., 413.
simple and exophthalmic, carbohydrate metabolism in, A., 1009.
- Gold**, hyperfine structure and nuclear moment of, A., 137.
isotopes of, A., 1295.
disintegration of, by neutrons, A., 1297.
deposits of, near Helena, Montana, A., 322.
in meteorite from Melrose, New Mexico, A., 60.
in black sands of Pacific Coast, B., 953.
in sea water, A., 468.
in petrified wood, B., 953.
in pyrites, B., 953.
extraction of, from ores, (P.), B., 810.
from Canadian ores, B., 312.
recovery of, from copper-mill tailing, B., 953.
from cyanide solutions, (P.), B., 148.
by mercury on dredges, B., 500.
from ores, etc., (P.), B., 556.
from roasted pyrites, (P.), B., 772.
from Reichenstein arsenic ores, B., 636.
electrolytic recovery of, from ores, etc., (P.), B., 107.
from residues, B., 555.
cyanidation of, B., 500.
flotation of, B., 996.
effect of sodium sulphide in, B., 953.
separation of, from sand, etc., (P.), B., 156.
apparatus for, by amalgamation, (P.), B., 505.
assay of black sands for, B., 412.
hardening of, (P.), B., 1051.
hyperline structure in spectrum of, A., 1437.
energy levels in spectrum of, A., 1292.
X-ray spectrum of, A., 1047.
- Gold**, excitation of *K* level in *X*-ray spectra of, A., 1293.
L-series *X*-ray spectrum of, A., 138, 272, 676, 1439.
absorption and reflexion of light by, A., 154.
L ionisations of, by cathode rays, A., 138.
artificial radioactivity in, A., 426.
electrical resistance of, at low temperatures, A., 154.
losses of, during melting, B., 905.
hydrothermal experiments with, A., 1088.
passivity of, A., 1326.
anodic passivation of, in chloride solutions, A., 39.
diffusion of, in lead, A., 158.
rate of solution of, B., 64.
solubility of, in ferric sulphate, A., 928.
concentration of, in blister copper, B., 996.
structure and physical properties of thin films of, A., 1449.
oxide films on, A., 831.
effect of heat on structure of sputtered films of, A., 17.
colloidal, diffraction of electrons by, A., 572.
coagulation of, A., 1074.
sols, acidoid, formation and properties of, A., 1073.
dental fillings of, (P.), B., 1099.
electrolytic production of embossing foils of, (P.), B., 236.
failure of fuses of, in contact with nickel-chromium alloys, B., 953.
precipitation of, on zinc shavings, B., 500.
as reagent for indole and pyrrole, A., 998.
alloy substitutes for, B., 552.
paints for imitation of, B., 561.
histochemical demonstration of, A., 1552.
distribution of, after therapy, A., 1528.
alluvial, origin of, in Morobe Goldfield, New Guinea, B., 459.
double and galvanic, differentiation between, B., 28.
- Gold alloys**, white, B., 1049.
with aluminium, fluorspar structure of, A., 917.
with bismuth, crystal structure of, A., 1060.
with chromium, resistance, B., 232.
with cobalt, resistance, B., 771.
with copper, A., 291, 816, 1198.
transitions in, A., 439, 693.
with lead, crystal structure of, A., 920.
with palladium, coloured, B., 771.
with platinum and silver, action of sulphuric acid on, A., 721.
with praseodymium, A., 23.
with silver, A., 158.
- Gold salts with complex thio-acids**, physiological action of, A., 656.
- Gold chloride**, preparation of aurothio-sulphates from, A., 49.
auric salts, detection of, A., 316.
tribromogold, A., 459.
- Gold organic compounds**, A., 479, 1112.
with diaminobutanes, A., 1227.
with mercaptopyrimidines, (P.), B., 750.
- Gold detection and determination** :-
errors in assay of, B., 595.
detection of, A., 53.
microchemically, A., 838.
microscopically, A., 1096.
in animal tissues, A., 1290.
in spirochetes and trypanosomes, A., 257.
detection and determination of, by means of carbon monoxide, A., 1339.
in solutions, B., 729.

Gold detection and determination:—
determination of, by pan-washing and analysis, B., 500.
by photometric titration, A., 56.
microchemically, in alloys, B., 678.
in presence of palladium and tin, A., A., 1096.

Gold electrodes. See under *Electrodes*.

Gold ores, amalgamation during fine grinding of, B., 953.
separation of, by amalgamation, (P.), B., 772.
amalgamation and cyanidation of, B., 953.
cyaniding of, (P.), B., 556.
addition of lead salts in, B., 807.
dissolved oxygen in solutions from, B., 105.
concentration of, from pulp, (P.), B., 908.
flotation of, B., 552.
froth flotation of, (P.), B., 999.
improved flotation cell for, B., 996.
lixiviation of, (P.), B., 908.
arsenide and sulphide, extraction of metals from, (P.), B., 156.
of Belgian Congo, working-up of, B., 28.
containing copper and arsenic, working-up of, (P.), B., 235.
treatment of tailings from, at Bendigo, B., 104.
low-grade, treatment of, B., 500.
of Southern America, B., 953.
of Western Quebec, A., 1101.
Witwatersrand, treatment of, B., 552.
flotation of, B., 232.

Gold wire, hard and soft, effect of pressure on electrical resistance of, A., 1062.

Goldfish, astacene from skin of, A., 646.

Gonads, influence of, on metabolism, A., 128.
relations of, with anterior pituitary, A., 1424.
of immature pigeons, response of, to gonadotropic hormones, A., 412.

Gonadostimulin in urine of cancer, A., 381.

Gonadotropic extracts, distributed dosage with, A., 791.
action of, on uterus, A., 1426.
ovulation by, A., 791.
substance inhibiting action of, A., 791.

Goniometer, X-ray, A., 839.

Weissenberg, applications of, A., 465.

Gossypol, A., 984.
influence of, on colour of cotton-seed oil, B., 732.
effect of diet on ingestion of, A., 1529.
detoxication of, by calcium salts, A., 396.

Gourds. See *Cucurbita pepo*.

Gout, intermediary purine metabolism in, A., 1149.

Grain, effects of weed control and preceding crops on, B., 73.
vernalisation of, B., 566.
kilns for drying of, (P.), B., 1116.
fumigation of, (P.), B., 285.
husking of, (P.), B., 827.
towers, silos, etc., for storage of, (P.), B., 782.
seed-, disinfectants for, (P.), B., 248.
standing, moisture changes in, B., 1157.
ungerminated, effect of rennin on diastatic power of, A., 1024.
determination in, of moisture, B., 121, 249, 697.
of sulphur, B., 1018.

Grain products, treatment of, (P.), B., 252.

Gramine, A., 1386.
and its concomitants in barley leaves, A., 1434.

Gramineae, germination hormone in, A., 905.
oils from, B., 463.

Graminin, structure of, and its acetate, A., 69.

Gramophone records, waxes for, B., 1102.

Granite, age of, A., 1100.
relation of, to anorthosite, A., 602.
Dorback, A., 955.
Kakola, A., 1100.
orthite, of S.W. Karamazar, A., 842.
pre-Cambrian, heavy mineral analyses of, A., 1220.
of the Black Hills, A., 602.
in the Canadian Shield, A., 1220.
from Sheahan Quarry, Missouri, A., 842.

Granite-porphyrines of Great Bear Lake, Canada, A., 1344.

Granite-schist in Stewart Island, N. Zealand, A., 725.

Granodiorite laccolith, Malka river, radium in, A., 60.

Granular materials, production of, (P.), B., 531.
apparatus for treatment, washing, drying, etc., of, (P.), B., 2.
drying of, (P.), B., 177, 531.
apparatus for, (P.), B., 386.
washer boxes for, (P.), B., 481.
de-watering of, (P.), B., 257.
separation of, (P.), B., 882.
apparatus for, (P.), B., 83.
separators for, (P.), B., 929.
pneumatic separators for, (P.), B., 658.
subdivision of, by spraying, (P.), B., 50.
delivery shoots, etc., for, (P.), B., 754.
motion of, in horizontal rotating cylinders, B., 833.
mixing of, (P.), B., 434.
agitation of suspensions of, in liquids, (P.), B., 51.
apparatus for determination of grain sizes in, (P.), B., 531.
reduction of, (P.), B., 1074.
mixed, adjustment of water content of, (P.), B., 754.

Granulocytopenia, due to pyramidone, A., 1017.

Grapes, control of *Botrytis* rot of, B., 822, 875.
danger from spray residues on, B., 78.
Emperor, effect of sulphur dioxide fumigation on respiration of, B., 423.
seedless, vitamins in, B., 572.

Grape juice, effect of, on urinary acidity, compared with other fruit juices, A., 1524.

Grape must, inhibitory growth-factor from, A., 1539.

Grape-seed oil, production and uses of, B., 1002.
California, B., 1101.

Grapefruit, effect of nutritional balance on, B., 422.
feeding value of cannery refuse of, B., 605.
digestibility of refuse from canneries for, B., 1066.
pink, pigments of, A., 1040.

Graphite, X-ray analysis of structure of, A., 163.
disperse structure of, A., 17.
twinning in, A., 285.
electron photographs of, A., 18.
formation of, from diamond, A., 1306.
flotation of, with xanthate collectors, B., 671.
treatment of electrodes of, (P.), B., 1082.
desorption of ketonic group from, A., 829.
as adsorbent and catalyst, A., 1209.
crystals, large artificial, A., 1449.

Graphite crystals, diffraction of slow electrons by, A., 687.
influence of "swelling" on diamagnetism of, A., 814.
colloidal, manufacture of suspensions of, (P.), B., 9.
suspensions of, in metals for bearings, (P.), B., 1098.
effect of, on corrosion of boiler plates, B., 104.
lubrication of automobile engines with, B., 791.
production of oil emulsions of, (P.), B., 583.
size-frequency in oil suspensions of, B., 392.
oxidation of, A., 50, 592, 714.
effect of X-rays and electric discharge on, A., 832.
in electrolytic melts, A., 1210.
action of, with carbon dioxide or oxygen, A., 588.
effect of oxygen on, at high temperatures, A., 922.
application of, to lacquer coatings, (P.), B., 34.
production of lubricants from, (P.), B., 217, 394, 486.
substances analogous to, A., 1333.
powdered compressed, electrical conductivity of, A., 683.

Grass, sowing of, in drills, B., 282.
effect of fertilisers on composition of, B., 117.
response of, to treatment on acid upland soils, B., 245, 777.
tolerance of, to toxic aluminium, B., 821.
calcium cyanamide and nitrogenous fertilisers for, B., 38.
effect of manures on nitrogen and ash contents of, B., 166.
nitrogen uptake of, grown with lucerne, B., 38.
influence of nitrogen fertilisers on composition of pasture, hay, and aftermath from, B., 117.
phosphoric acid and potash in soils and, B., 1011.
drying of, (P.), B., 692.
composition and feeding value of, B., 867.
feeding value of silage of, in comparison with mangolds and hay, B., 781.
assimilation of metallic nitrogenous salts by, A., 1037.
active substance of pollen of, A., 780.
control of *Odontria zealandica* in, B., 374.
crested wheat, B., 251.
forage, amino-acids of proteins of, A., 1433.
containing horsetail, ensilage of, B., 971.
meadow, fertilisers for, for sheep, B., 117.
from irrigated meadows, ensilage of, B., 118.
Napier, digestibility of hay and silage of, B., 1066.
Oklahoma, calcium, nitrogen, and phosphorus in, A., 551.
pasture, composition of, under intensive grazing systems, B., 522.
effect of cutting and nitrate fertilisers on growth and composition of, B., 373.
prairie, total calcium and phosphorus in, and soil nutrients, B., 325.
Sudan, effect of chloropicrin soil treatment on, B., 118.
young, artificial drying of, B., 285.

Grass staggers, magnesium in blood of calves with, A., 1150.

- Grasshoppers**, insecticides for, B., 1013.
 use of oil in baits for, B., 327.
 non-arsenical stomach poisons for control of, B., 118.
 eggs of. See under Eggs.
 embryo, respiratory quotient of, A., 889.
 temperature and viscosity in, A., 1405.
 effect of carbon dioxide on beat of body walls of, A., 1413.
- Grassland**, influence of season and lime on botanical composition of herbage of, B., 821.
 action of liquid manure on, B., 689.
 control of *Phyllopertha horticola* in, B., 822.
- Gratings**, aluminium coating of, A., 57.
- Gratiola officinalis*, cardiac-active substances from, A., 1019.
- Gratiotoxin**, A., 1019.
- Graves' disease**. See Goitre, exophthalmic.
- Grease**, production of, (P.), B., 109.
 removal of, with solvents, (P.), B., 1076.
 cup, manufacture of, (P.), B., 733.
 lime and soda, stability of, B., 508.
- Greasewood**, toxicity of, A., 246.
- Greenalite**, A., 954.
- Greenheart**, British Guiana, damage of, by marine borers in Rangoon River, B., 102.
- Greenhouses**, control of Fuller's rose beetle in, B., 778.
 soils in. See under Soils.
- Grignard reagents**, preparation of, A., 1112.
 racemisation in, A., 1228.
 preparation of activated magnesium for, A., 1111.
 decomposition voltage of, in ethereal solution, A., 566, 1515.
 α -addition of, to hydroxymethylene ketones, A., 733.
 action of, with alkyl sulphates and *p*-toluenesulphonates, A., 326.
 on aromatic sulphonyl fluorides, A., 739.
 with $\alpha\beta$ -bisbenzylideneaminoethane, A., 855.
 with α -bromocamphor, A., 349.
 on 2-chlorocyclopentanone, A., 979.
 chemiluminescence in, with chloropierin, A., 147.
 with dibromoamine, A., 1334.
 with naphthalene- and phenanthrene-carboxylic esters, A., 1234.
 on α -phenyl- β -2-furylacrylonitrile, A., 756.
 on $\alpha\beta$ -unsaturated aldehydes, A., 963.
 with unsaturated hydrocarbons, A., 1115.
 use of, in study of polynuclear ring systems, A., 751.
 acetylenic, reaction of, with ethylene oxide, A., 193, 470.
 mixed secondary and tertiary, aldolisation of ketones by, A., 1112.
- Grinding**, B., 385.
 grain size in, B., 657.
 fine, (P.), B., 1026.
- Grinding apparatus**, (P.), B., 929, 1121.
 for paints, etc., (P.), B., 833.
 for paper pulp, etc., (P.), B., 882.
- Grinding machines**, (P.), B., 338.
- Groundnut meal**, constituents of, B., 819.
- Groundnut oil**, frothing of, B., 463.
- Groundwood**, study of, B., 1088.
- Group-resonators**, structure of, A., 1302.
- Growth and development**, A., 651, 1528.
 metabolism during, A., 112.
 cure of deficiency in, by wheat-germ oil, A., 418.
- Growth substances**, A., 534, 672, 1175, 1282.
 synthesis of, by micro-organisms, A., 256.
 biological synthesis of, and their utilisation by micro-organisms, A., 1166.
 for micro-organisms, A., 663.
 from micro-organisms, solubility of, A., 1289.
 determination of callus-forming action of pastes containing, A., 1039.
 for plants, A., 1548.
 in plants, A., 1039.
 as factors in formation of plant organisms, A., 795.
 action of, in parallelotropic organs of plants, A., 1039.
 in indigenous plants, A., 1038.
 inhibition of action of, by parts of living plants, A., 1038.
 in soils, A., 672.
 distribution of, in normal and tumour tissues, A., 1165.
 in urine, A., 786.
 auxin and bios groups, A., 418.
 yeast as indicator for, A., 124.
- Grünerite**, from Rockport, Mass., A., 1478.
- Guaiacol**, production of, from beechwood tar, B., 613.
 from wood creosote, B., 1028.
 alkaline-earth compounds of, A., 856.
 derivatives, coupling by dehydrogenation of, A., 1237.
 azo-derivatives, A., 1489.
- Guaiacol- β -*d*-glucoside**, A., 1536.
- Guaiacolsulphonic acid**, potassium salt, B., 973.
- Guaiacum resin**, constituents of, A., 485.
- dl*-Guaiaretic acid diethyl ether**, and its derivatives, A., 485.
- l*-Guaiaretic acid diethyl ether**, A., 485.
- Guanidine**, penetration of into plant cells, A., 1179.
 conversion of, into urea by moulds, A., 254.
 azidodithiocarbonate and trinitride, A., 72.
 chromates, crystal structure of, A., 152.
 nitrate, preparation of, from ammonium thiocyanate, A., 1111.
 derivatives, toxicity and hypoglycæmic action of, A., 1020.
 aromatic, pharmacology of, A., 528, 894.
 production of fatty acid derivatives of, (P.), B., 620.
 acidosis of intoxication by, A., 894.
 effect of ingestion of, on alkali reserve and pH , A., 651.
 excretion of, in parathyroidectomy, A., 1010.
- Guanidine**, amino-, carbonate, A., 1509.
 nitro-, nitrate, preparation of, A., 332.
- Guanidinium iodide**, refractive index of, A., 568.
- ϵ -Guanidinohexoylglutamic acid**, α -amino-, A., 851.
- Guanidonium bromide**, crystal structure of, A., 921.
 iodide, crystal structure of, A., 571.
- Guanine**, thermal data for, A., 1324.
 in excreta of arachnids, A., 1148.
 determination of, in muscle, iodometrically, A., 1266.
- Guano**, natural, B., 567.
- Guanosine**, fate of, in dogs, A., 113.
 boric acid reaction with, A., 1266.
- "Guanylhazones"**, nitro-. See Guanylimines, *N*-nitro-.
- Guanylimines**, *N*-nitro-, A., 769.
- Guinea-pigs**, effect of yeast dosage on growth and reproduction of, A., 702.
 vitamin-C requirements of, A., 1286.
 as hæmatopoietic test animals, A., 107.
 embryo-coagulating action of juice of tissues of, A., 375.
- d*-Gulomethylonic acid**, and its sodium salt, A., 734.
- d*-Gulomethylonolactone**, A., 1483.
 and its *p*-bromophenylhydrazide, A., 734.
- d*-Gulomethyllose**, and its derivatives, A., 199, 734, 1483.
- d*-Gulonic acid**, (P.), B., 606.
- Gulose**, formation of, from glucose by optical inversion, A., 963.
- l*-Gulose**, formation of, from *d*-glucose, A., 329.
- Gums**, properties and structure of gels of, A., 32.
 reversible opalescence in sols of, A., 164.
 composition of cellulose acetate and, (P.), B., 735.
 natural, treatment of, (P.), B., 111.
 for varnishes, B., 860.
 from Nigeria, B., 40.
 Persian ammoniacum, umbelliferone in, B., 573.
 Senegal, alimentary unbalance caused by, A., 261.
- Gum acacia**, determination of, in blood, spectroscopically, A., 1000.
- Gum arabic**, physico-chemical properties of solutions of, A., 31, 294.
 osmotic pressures of solutions of, A., 297.
 sols, effect of heat on, A., 31.
 action of alcohol on, A., 821.
 influence of cations on, in presence of alcohol, A., 821.
 action of hydrocyanic acid on oxidase of, A., 1162.
 detection of, B., 329.
- Gum elemi**, essential oils of, B., 654.
- Gum karaya**. See Karaya gum.
- Gum tragacanth**, preparation of mucilage of, B., 253.
 viscosity of mucilages of, B., 253.
 preservation of mucilage of, B., 253.
 evaluation of, B., 823.
- Guns**, prevention of "mouth flame" of, B., 879.
- Gunda ulvæ*, osmosis in, A., 1012.
- Gunpowder**, determination of ratio of combustion of, with Thring's indicator, B., 879.
- Gurjun-azulene**, A., 1376.
- isoGurjunenes**, and their tetrahydrides, A., 1376.
- Gutta-percha**, treatment of, (P.), B., 241.
 resins of. See under Resins.
 manufacture of articles of, (P.), B., 162.
 production of plastic material from, (P.), B., 113.
 production of threads of, (P.), B., 280.
 hydrochloride, reduction of, A., 1349.
 of S. Africa, B., 1154.
 of U.S.S.R., B., 321.
- cuculo*Gutta-perchas, A., 1349.
- Gymnosporia acuminata*, acetone and benzene extracts of, B., 1154.
- Gypsum**, control of crystal size of, from phosphate rock, (P.), B., 899.
 calcination of, (P.), B., 1092.
 conversion of, by aqueous ammonium sulphate, B., 493.
 action of water on, B., 451.
 use of, as fertiliser, B., 689.
 production of ammonia-nitrate fertilisers from, B., 116.
 production of ammonium sulphate from, B., 671.

Gypsum, production of sulphuric acid and Portland cement from, B., 23, 146, 671.
 origin of deposits of, at Sandusky, Ohio, A., 1346.
Gyrophora Dillenii, constituents of, A., 1432.

H.

Haddocks, influence of freezing temperature on musculo of, B., 172.
 keeping quality of, from cold storage, B., 476.
 Norway, liver oil of, B., 1003.
 Haddock meal, effect of method of manufacture on nutritive value of, B., 605.
 Hæmagglutination, A., 1143.
 Hæmatin, reduced, absorption of carbon monoxide by, A., 1517.
 Hæmatommic acid methyl ether, A., 214.
 methyl ester, methyl ether, A., 1432.
 Hæmatopoiesis, guinea-pigs as test animals for, A., 107.
 Hæmatoprosthetin, structure of, A., 1391, 1392.
 action of sodium hydroxide on, A., 1392.
 Hæmin, structure and magnetic susceptibility of, A., 573.
 formation of bile-pigments from, A., 884.
 Teichmann's, action of sodium hydroxide on, A., 1392.
 Hæmochromatosis, A., 108.
 Hæmochromogen, carbon monoxide, absorption spectra of, A., 770, 999.
 Hæmocyanin, effect of oxygenation and reduction on equilibrium of, with acids and bases, A., 770.
Limulus, prosthetic group of, A., 229.
 Hæmoerythrin of *Sipunculus*, osmotic pressure and mol. wt. of, A., 229.
 Hæmoglobin, A., 1177.
 influence of bone-marrow extract on synthesis of, A., 230.
 production of, on diets containing bread, A., 1271.
 composition and specificity of, of various species, A., 640.
 X-ray diffraction by, A., 687.
 spectra and specificity of, of various species, A., 640.
 oxygen capacity of, A., 371.
 relation of, to molecular state, A., 1141.
 oxygen equilibrium of, A., 878.
 solutions, determination in, of carbamino-bound carbon dioxide in, A., 102.
 action of sodium hydroxide on, A., 1392.
 derivatives, spectroscopy of, A., 372.
 carbamido-compounds of carbon dioxide and, and their determination, A., 770.
 function of, in developing chicks, A., 878.
 in blood of rachitic chicks, A., 1517.
 in relation to blood-cell volume, A., 229.
 reactions of cells containing, to acid and basic dyes, A., 372.
 non-production of precipitins by, A., 508.
 excretion of, in urine, A., 879.
 relation of, to urine pigments, A., 103.
 disorders of, A., 1617.
 regeneration of, A., 1391.
 rôle of copper in, A., 380.
 in Ringer-Locke solutions as substitute for blood, A., 878.
 human, A., 878.
 solubility of, in salt solutions, A., 878.
 reduced, carbhæmoglobin of, A., 1260.

Hæmoglobin, determination of, microchemically, A., 1141.
 volumetrically, A., 1517.
 in blood, A., 102.
 in muscle, A., 1397.
 Hæmoglobinometers, A., 999, 1391.
 Hæmolysis, kinetics of, A., 881.
 influence of salts and sugar on, A., 1143.
 effect of sodium taurocholate-serum systems on, A., 771.
 by Australian snake venoms, A., 1143.
 by glucosides, A., 1519.
 from hypotonia, A., 509, 510.
 by hypotonic solutions, effect of temperature on, A., 1394.
 by lecithin, A., 881.
 by saponins, A., 881.
 by solanine, A., 881.
 photodynamic, action of potassium cyanide on, A., 643.
 Hæmophilia, clotting deficiency of, A., 1263.
 arrest of heavy bleeding in, A., 644.
 treatment of, with Congo red, A., 1007.
 effect of hormones on, A., 666.
 Hæmorrhage, effect of cephalin and lecithin on, A., 244.
 dietary, in chicks, A., 903, 1401, 1148.
 Hæmozoin, A., 125.
 Hafnium, at. wt. and isotopes of, A., 802.
 spectrum of, A., 137, 424.
 second spectrum of, A., 137.
 Hafnium tetrafluoride, A., 180.
 crystal structure of, A., 285.
 Hagaretoxin, A., 1410.
 Hair, X-ray structure of, A., 1195.
 dyes for. See under Dyes.
 animal, structure of, A., 1144, 1266.
 fibre forms in, A., 1396.
 resistance of, to micro-organisms, B., 141.
 Halibut-liver oil, B., 159.
 constants of, B., 560.
 preservation of, with quinol, B., 859.
 effect of, on vitamin-A of serum, A., 129.
 Halides, thermal properties of, A., 574.
 fused, metal displacement equilibria in, A., 168.
 inorganic, catalytic action of, A., 454.
 non-metallic, molecular structures of, A., 18.
 organic, unsaturated, treatment of, (P.), B., 1129.
 saturated, absorption spectra of, A., 427.
 univalent, thermodynamic properties of mixtures of, in aqueous solution, A., 1461.
 tervalent, absorption spectra of, in ether solution and their dissociation products, A., 1444.
 detection of, in presence of thiocyanates, A., 1091.
 determination of, volumetrically, A., 835.
 cresolphthalein as indicator in argentometric determination of, A., 53.
 polyhalides, origin of, A., 945.
 Hall coefficients, measured and theoretical, A., 1452.
 Hall effect, A., 813.
 in alloys, A., 693.
 Halloysite, A., 322, 571.
 Halochromic compounds, isomerisms of, A., 1124.
Halocynthia papillosa, carotenoids of, A., 233.
 Haloform reaction, A., 751, 979.
 Halogens, constants for, and their gaseous diatomic compounds, A., 569.
 ionisation potentials and energies of formation of molecules of, A., 12.
 overvoltage of. See under Overyoltage.

Halogens, adsorption of, by charcoal and silica gel, A., 696.
 solubility of, in heptane, A., 1067.
 salt-like properties of, A., 857.
 oxidation by, of formic and oxalic acids in the dark, A., 1207.
 gaseous, silver absorber for, A., 952.
 organically-combined, determination of, semi-micro-volumetrically, A., 769.
 determination of, mercurimetrically, A., 183.
 by sodium-higher alcohol method, A., 183.
 by Vollhard's method, influence of alcohols and ether on, A., 183.
 in body-fluids and tissues, A., 1436.
 in presence of cyanides, A., 183.
 in organic compounds, A., 876, 1258.
 ψ -Halogens, A., 861.
 Halogen compounds, reactivity of, A., 1465.
 action of, on alkali iodide solutions, A., 179.
 Halogen hydrides, emission spectra of, A., 280.
 ionised, band spectra of, A., 913.
 colours produced by alcohols, ethers, aldehydes, etc., in mixtures of cupric chloride and, A., 167.
 reactions of, with alkali metal atoms, A., 1327.
 Halogen ions, quenching of fluorescence by, A., 681.
 Halogen organic compounds, aliphatic, formation of double linking in, A., 62.
 unsaturated, production of, (P.), B., 715.
 Halogen-tannins, reaction of, A., 1244.
 Halogenation, A., 1114, 1229.
 inhibition of, by oxygen, A., 62.
 of organic compounds, A., 76.
 Halogeno-acids, kinetics of reaction of, with oxyhalogen acids, A., 709.
 α -Halogeno-acids, esters, condensation of, with α -formylsuccinic esters, A., 1106.
 fatty, substitution equilibria between halogens in, A., 34.
 Halogeno-aldehydes, condensation of, with nitromethane, A., 1224.
 α -Halogeno-ketones, A., 979, 1124.
 reaction of, with magnesium, A., 492.
 Halogenohydrins, acetylene-allylene-diene changes of, A., 605.
 α -Halogenonitroso-compounds, reactions of, with organo-metallic compounds, A., 1481.
 Halogenophenols, bactericidal and fungicidal action of, A., 1031.
 Halophytes, biology of, A., 266, 671.
 chemistry of cell sap in, A., 671.
 Halowax, ovicidal action of, B., 969.
 Hamamelonic acid, synthesis of, A., 197.
 Hamamelose, constitution of, A., 197.
 Hanfanehin A, and its salts, A., 1257.
 Hanfanehin B, A., 1257.
 Han-fang-chi, alkaloids of, A., 873, 1257.
 Haptens, separation of, by adsorption on colloids, A., 105.
 Hardness, apparatus for measurement of, (P.), B., 882.
 micro-machine for determination of, B., 230.
 use of diamond in testing of, B., 593.
 of electric-furnace and natural abrasives, comparison of, B., 1094.
 of metals, machine for testing of, B., 501.
 Hardwoods, starch and polysaccharides of, A., 797.
 Harmaline, amino- and nitro-derivatives, A., 765.
 Harmaline series, A., 765.
 Harmalol O-alkyl ethers, A., 765.

- Harmine**, A., 765.
Harmine, amino- and nitro-derivatives, A., 765.
Harmol O-alkyl ethers, A., 765.
Hauerite, crystal structure of, A., 17.
Hay, rôle of fungi in respiration and fermentation of, in storage, B., 1061.
 digestibility and nutritive value of, for ruminants, B., 699.
 high-moor meadow, nutrient content of, B., 1061.
 lucerne. See *Lucerne hay*.
 meadow, starch equivalent of, B., 251.
 prairie, effect of rainfall on total calcium and phosphorus in, B., 1110.
Hay fever, treatment of, with viosterol, A., 514.
Hazeic acid, constitution of, A., 757.
Healing, electrical treatment of air for, (P.), B., 682.
Heart, glucosides of. See under *Glucosides*.
 glycogen content of, A., 521.
 lactic acid in metabolism of, A., 1017.
 activation of proteolytic enzymogen of ventricle of, A., 1538.
 action of dinitro-compounds on, A., 526.
 vegetable poisons for, A., 396.
 re-stimulation of, impaired by chloroform narcosis, A., 526.
 biological assay of stimulants of, A., 396.
 liver function in congestive failure of, A., 1526.
 effect of total ablation of thyroid on congestive failure of, A., 516.
 diseases of, basal metabolism and specific dynamic action in, A., 384.
 ionic changes and urea in, A., 1402.
 protein content of œdema fluid in, A., 887.
 respiratory exchange during exercise in, A., 383.
 effect of removal of thyroid in, A., 236.
 hypothyroidism in, after thyroidectomy, A., 775.
 rheumatic, determination of vitamin-C in urine in, A., 1287.
 chicken embryo, fibrillation of, A., 247.
 denervated, effect of thyroxine and thyroidectomy on response of, to adrenaline, A., 900.
 dog's, glucose and lactate consumption by, A., 1273.
 perfused, phosphorus compounds in, A., 521.
 frog's, arrest of ventricle of, in asphyxia, A., 119.
 transformation of adenosinetriphosphoric acid in, A., 109.
 anaërobic breakdown of carbohydrate in ventricle of, A., 110.
 action of cardiotonics on, A., 1158.
 glucose consumption of, in relation to work performance, A., 654.
 perfusion of, with various sugars and insulin, A., 1151.
 excised, effect of thyroxine on metabolism of, A., 540.
 human, output of, A., 371.
 creatine content of myocardium of, A., 516.
 glycogen and carbohydrate in, A., 105, 1004.
Limulus, pH and rhythmic activity of nerve cells in, A., 1414.
 mammalian, physiology of, A., 383.
 effect of calcium ions on energy of, A., 1528.
 action of insulin on, in diabetes, A., 127.
 effect of iodoacetic acid and sodium cyanide on, A., 530.
Heart, terrapin's, perfused, oxygen consumption of, A., 1150.
Heat, Nernst's theorem of, A., 691.
 measurement of, application of Newton's law of cooling to, A., 57.
 composition for generation of, (P.), B., 786.
 recovery of, (P.), B., 1073.
 conduction of, calculations on, B., 49.
 equation for, B., 433.
 conversion of, into work by "rubber pendulum," B., 240.
 flow of, in porous insulators, B., 337.
 loss of, from electrically heated slabs, B., 209.
 gastight rotating joint for apparatus for recovery of, (P.), B., 578.
 regulation of, and water exchange, A., 656.
 liquid for storage of, (P.), B., 786.
 transfer of, (P.), B., 657.
 non-linear equations in theory of, A., 1072.
 compositions for, (P.), B., 578.
 liquid for, B., 49; (P.), B., 882.
 by vaporisation of liquids from vertical and horizontal surfaces, B., 481.
 and mass diffusion, B., 577.
 for heating, B., 657.
 in calcium chloride brine in pipes, B., 433.
 in fluids, B., 1121.
 in food plant, B., 129.
 through furnace walls, B., 129.
 effect of magnetic fields on, through gases, A., 156.
 between condensing organic vapours and metal tubes, B., 929.
 with turbulent fluids, B., 881.
 in waste-heat boilers, B., 785.
 latent, relation of, to vapour pressure and viscosity, A., 575.
 molecular, A., 690.
 specific, theory of, A., 690.
 calculation of, from spectroscopic data, A., 301.
 determination of, electrically, A., 1340.
 discontinuities in, A., 156.
 at low temperatures, A., 574, 924.
 of crystals, A., 573.
 anomalous, A., 1197.
 of gases, A., 289.
 at high temperatures, A., 155.
 true and mean, B., 898.
 of perfect gases, effect of temperature on, A., 573.
 of liquids, A., 574.
 and their vapours, A., 704.
 of metals, at high temperatures, A., 21.
 of metals and alloys, A., 690.
 of refractory materials, determination of, B., 61.
 of solids at high temperatures, A., 924.
 at constant volume, variation of, with temperature, A., 1312.
 anomalous, A., 437.
Heat capacity, approximate equation for, at high temperatures, A., 289.
 at low temperatures, A., 1063.
 of organic compounds, A., 1339.
 molecular, of organic compounds, A., 1204.
Heat exchangers, (P.), B., 2, 83, 129, 177, 210, 289, 337, 386, 531, 609.
 liquid for, (P.), B., 882.
 tubes for, (P.), B., 49.
 transfer of heat by organic vapours in, B., 929.
 for oil refining, B., 1081.
 glass, B., 529.
 high pressure, (P.), B., 2.
Heat exchangers, liquid-liquid, B., 1121.
 plate, (P.), B., 481, 657, 786.
 spiral, B., 705.
 tubular, (P.), B., 754, 833, 882, 977.
Heat of adsorption, determination of, thermocouple vacuum calorimeters for, A., 1474.
 of vapours from air by active charcoal, A., 930.
 of organic vapours on activated charcoal, 696.
Heat of combustion, and chemical constitution, A., 449.
 determination of, with micro-bomb, A., 188.
 of organic compounds, determination of, A., 465.
Heat of condensation, determination of, A., 436.
 of metals, A., 1454.
Heat of crystallisation, of ethyl esters of monobasic aliphatic acids, A., 21.
Heat of dilution, of non-electrolytic solutions, A., 1071.
 of strong electrolytes, A., 36.
Heat of dissociation, determination of, A., 570, 806.
 of organic compounds of type AB₂, A., 169.
Heat of fusion, of organic compounds, A., 304, 436.
 in relation to m.p., A., 290.
 molecular, and constitution of organic compounds, A., 1133.
Heat of reaction, calculation of, from equilibrium constants, A., 304.
 in liquid ammonia, A., 37.
 organic, A., 825.
Heat of solution, in liquid ammonia, A., 37.
 of salts, A., 705.
 integral, determination of, A., 584.
Heat of sublimation, of organic compounds, A., 436.
Heat of vaporisation, of pure compounds, A., 436.
 latent, and temperature, A., 290.
 of azeotropic mixtures, A., 817.
Heat of wetting, A., 930, 1071.
 of metals, apparatus for determination of, A., 930.
Heating, fixing of baths for, (P.), B., 929.
 use of solution cycles for, B., 529.
 of oils, etc., (P.), B., 2.
 domestic, coke for, B., 884.
 electric, inductive, B., 772.
Heating apparatus, (P.), B., 882, 1073.
 for liquids, (P.), B., 435.
 electric, corrosion of wires in, B., 459.
 for evaporation prior to mineral analysis, A., 1217.
 inductive, B., 67.
Heavy hydrogen. See *Deuterium*.
Heavy water. See *Deuterium oxide*.
Hedera helix, osmotic pressure in, A., 1288.
Hederagenin, constitution of, A., 1126.
Heifers, feeding value of grape-fruit canery refuse for, B., 605.
 dairy, phosphorus requirements of, A., 1409.
Heliotherapy, effect of ozone on, A., 1022.
Heliotridane, degradation of, to a pyrrole base, A., 1255.
Heliotridane, hydroxy-, and its derivatives, A., 995.
Heliotropium lasiocarpum, alkaloids of, A., 995, 1255.
Helium, A., 1215.
 atomic mass of, A., 677.
 masses of hydrogen and, A., 5.
 atoms, wave functions for, A., 804.

- Helium atoms, excited, atomic energy states for, A., 1298.**
 double-excited, A., 799.
 effective cross-section of, with respect to He^+ , A., 1048.
 isotopes, A., 6.
 binding energy of, A., 911.
 viscosity of, A., 438.
 Jacyna's selection theorem for, A., 143.
 sources of, A., 724.
 occurrence of, in stratosphere, A., 1477.
 origin of, in natural gases, A., 322.
 in ocean water, A., 724.
 spectrum of, A., 135.
 emitted by high-frequency excitation, A., 423.
 electric and magnetic effects on, A., 1437.
 fluorescence spectrum of, A., 1.
 spectra of negative glow and Faraday dark space in, A., 556.
 light emission of, in extreme ultra-violet, A., 423.
 light excitation in, by helium atoms, A., 1294.
 Zeeman effect in, A., 799, 1437.
 total scattering of electrons in, A., 1294.
 electrical clean-up of, at low pressures, A., 4.
 conductivity of, A., 566.
 critical potential of, A., 273.
 ionisation of, by helium ions, A., 1294.
 ionisation area of, A., 804.
 resonance line of, A., 1437.
 specific heats, compression, and expansion coefficients of, A., 156.
 Joule-Thomson effect of, A., 22, 1198.
 compressibility of, A., 157.
 critical constants of, A., 925.
 Boyle's law of, A., 1064.
 liquefaction of, adiabatically, A., 57.
 liquid, specific heat of, A., 924.
 viscosity of, A., 1313.
 viscosity of binary mixtures of hydrogen, neon, and, A., 438.
 passage of, through solids, A., 159, 929.
 solubility of, in water, A., 817.
 in aqueous salt solutions, A., 1067.
 equation of state for, A., 574.
 Ramsay's work on, A., 724.
 compound of, with platinum, A., 1058.
 ionised, radioactivity of, A., 558.
- Helium determination:—**
 determination of, B., 225.
 in natural gas, B., 186.
- Helium 3, attempts to produce, A., 1212.**
- Helium ions, probability of collisions of, in argon, A., 558.**
 mobility of, in helium, A., 909.
 doubly-charged, A., 5.
 molecular, normal state of, A., 1294.
- Helix aperta, glutathione in aestivation of, A., 890.**
- Helix pomatia.** See Snails.
- Helmholtz equation, interpretation of, A., 290.**
- Helminths, chemistry of, A., 646.**
 chemotherapy of, A., 529.
- Heloderma suspectum.** See Gila monster.
- Helvella esculenta, distinctive reaction of, A., 1181.**
- Hemicelluloses, A., 673, 1435.**
 of English oak, A., 421.
 from oat hulls, A., 1485.
 in waste soda from viscose factories, B., 586.
 determination of, in faeces, A., 648.
- m-Hemipinic acid, synthesis of, A., 619.**
- Hemp, mixed crops of flax, oats, and, B., 166.**
- Hemp, carbohydrate-nitrogen ratios of male and female plants of, A., 265.**
 hydrolysis of phytin compounds from seeds of, A., 134.
 Deccan, A., 1435.
 Manila, pulping of, (P.), B., 96.
- Hemp resin, determination of physiological activity of, A., 1157.**
- Hempseed, effect of spontaneous heating on properties of, B., 1061.**
 quantity of oil in, in maturation and germination, A., 268.
- Hens, feeding of, with rhubarb leaves, B., 972.**
 digestibility of crude fibre of barley by, B., 972.
 vegetable proteins in laying and breeding flocks of, B., 332.
 glycerides of body-fat of, A., 645.
 eggs of. See under Eggs.
 control of northern fowl mite on, B., 327.
 embryo, arginase in development of, A., 659.
 laying, calcium requirements of, A., 393.
 phosphorus requirement of, B., 522.
 white Leghorn, effect of mineral diet on feathers of, A., 1529.
- Henbane-seed oil, B., 640.**
- β -Hendecamethylcellobiose, A., 1226.**
- n-Heneicosic acid, and its esters, A., 64.**
- Henry's reaction, flocculation in, A., 1402.**
- Heparin, A., 646, 1394.**
 preparation of, from ox-lung, A., 646.
 chemistry of, A., 1144.
 active esters of, A., 1519.
 inactivation of, in blood, A., 1024.
 combination of, with coagulants, A., 1002.
 with proteins, A., 1002.
 determination of unit of, A., 1024.
- Hepatectomy, effect of, on cholesterol and nitrogen in blood, A., 1149.**
 on ketonic substances of blood, A., 776.
 lactacidemia after, A., 776.
- Hepatofluavin, fluorescence spectrum of, A., 1145.**
- Hepatonephritis, experimental, in rabbits, A., 895.**
- Hepatopathy, glucoproteins in, A., 1402.**
- Heptadecamethyleneimine, and its esters, A., 868.**
- Heptadecan- λ -one, α -bromo-, A., 474.**
*cyclo*Heptadecanone thioisoxime, A., 869.
*cyclo*Heptadecanone-2-carboxyethylanilide, (P.), B., 1133.
- Heptadecodilactone, π -hydroxy-, A., 1351.**
- Heptadecic acid, π -amino-, and its salts and ethyl ester hydrochloride, A., 479.**
- Heptadecolactone, π -hydroxy-, A., 1351.**
- $\Delta^{\alpha\epsilon}$ -Heptadienes, $\gamma\delta$ -dihydroxy-, A., 963.**
- $\Delta^{\beta\epsilon}$ -Heptadiene- $\beta\zeta$ -dicarboxylic acid, and its diethyl ester, A., 620.**
- Heptaldehyde, polymerisation of, A., 739.**
p-nitrobenzoylhydrazone, A., 1259.
o-tolylesemicarbazone, A., 1259.
- Heptamethylcellobiose, A., 1355.**
- Heptamethylgalactaraban, A., 736.**
- n-Heptane, synthesis of, A., 352.**
 X-ray scattering by, A., 813.
 electric moment of, A., 567.
 volatility of mixtures of alcohol, benzene, and, A., 157.
 isomerisation of, A., 324, 843.
 as solvent, A., 1067.
- n-Heptane, $\alpha\epsilon$ -dibromo-, A., 626.**
- Heptanes, dichloro-, A., 193.**
- cyclo*Heptanone thioisoxime, A., 868.**
- cyclo*Heptanone-2-carboxyethylanilide, (P.), B., 1133.**
- cyclo*Heptanone-2-carboxymethylanilide, (P.), B., 1133.**
- cyclo*Heptanonedimethylanilide, (P.), B., 1133.**
- Δ^{α} -Heptene, β -chloro-, A., 193.**
- Δ^{β} -Hepten- ζ -ol, and its semicarbazone, A., 1368.**
- Δ^{α} -Heptenonitriles, A., 1357.**
- Heptenylpyrogallol, A., 1362.**
- Δ^{α} -Heptinene, preparation of, by dehalogenation, A., 193.**
- Heptodilactone, ζ -hydroxy-, A., 1351.**
- η -Heptoic acid, $\alpha\gamma\delta$ -tribromo-, ethyl ester, A., 751.**
- Heptodideethylamide, cyano-, (P.), B., 1133.**
- Heptolactone, ζ -hydroxy-, A., 1351.**
- Hepto- β -phenylethylamide, A., 70.**
- Heptotrilactone, ζ -hydroxy-, A., 1351.**
- Heptyl alcohol, Raman spectrum of, A., 11.**
- n-Heptyl bromide, preparation of, A., 193.**
 dipole moment of, A., 916.
 chlorosulphonate, sulphate, and sulphite, A., 729.
- tert-Heptyl iodide, A., 1489.**
- p*-n-Heptylacetophenone, A., 1369.**
- n-Heptylamine, Raman spectrum of, A., 146.**
- 1-Heptylanthraquinone, 2-chloro-, (P.), B., 622.**
- 4-Heptylbenzanthrone, A., 752.**
- N-Heptyl-p-bromobenzenesulphon-p-aniside, A., 193.**
- α -Heptyl- γ -butyrolactone, A., 474.**
- Heptylidene malonic acid, ethyl ester, A., 64.**
- Heptylmalonic acid, diethyl ester, A., 474.**
- o-Heptylphenol, anthelmintic action of, A., 1412.**
- 4-n-Heptylphenol, 2-chloro-, and its α -naphthoate, (P.), B., 974.**
- p*-tert-Heptylphenol, (P.), B., 1154.**
- p*'-n-Heptylphenyl styryl ketone, A., 1369.**
- Heptylvinylacetylene, manufacture of, (P.), B., 347.**
- Herapathite, manufacture of colloidal suspensions of, (P.), B., 174, 783*.**
- Herbs, microscopy of, B., 43.**
- Herbicides, decomposition and movement of, in soils, B., 1012.**
- Herderite, from Topsham, Maine, A., 954.**
- Heroin, detection of, from saliva tests, A., 397.**
- Herrings, recovery of oil and press-cake from, (P.), B., 319.**
 effect of fat content on preserving qualities of, B., 698.
 digestion by enzymes in, A., 1416.
 vitamin-A content of, A., 260.
- Herring meal, feeding of pigs with, B., 78, 922.**
- Herring oil, pristane in, A., 1397.**
- Herschel effect, theory of, A., 1331.**
 intermittent exposure and, B., 750.
- isoHesperidoside, A., 906.**
- Heterakis gallinae, effect of dietary deficiency on infestation of chickens with, A., 384.**
- Hetero-auxin, constitutional specificity of, A., 1351.**
 detection of, A., 639.
- Heterocyclic compounds, configuration of, A., 1257, 1390.**
 synthesis of, by interaction of *o*-diamines and sugars, A., 224.
 use of carbohydrates in, A., 1381.
 direct introduction of amino-group into, A., 223.
 ring formation in, A., 990.
 comparison of, with benzene, A., 1377, 1508.
 relation of residual affinity of, to light absorption, A., 1052.

- Heterocyclic compounds**, formation and stability of polybromides of, A., 503, 1135.
 containing arsenic in the ring, A., 1516.
 eight-membered, A., 760.
 nitrogenous, diene synthesis of, A., 500, 1251.
 polymembered, A., 65, 868, 1351.
- Heteropolar compounds**, A., 1253.
- Heteropolarity**, A., 216, 483, 973, 1241.
- Heteropoly-acids**, constitution of, A., 947.
 and their salts, identification of, by X-ray photographs, A., 834.
 complex salts of, A., 703.
- 12-Heteropoly-acids**, cesium salts, X-ray structure of, A., 920.
- Heterosides**, ultra-violet absorption spectra and structure of, A., 1485.
 cyanogenic, isomerisation of, A., 1083.
- Heusler alloys**, A., 440.
- Hexa-*p*-alkylphenylethanes**, A., 1115.
- Hexabromodisiloxan**, A., 714.
- Hexadecahydro-5:6:7:8-dicyclopenteno-1:2:3:4-dibenzanthraquinone**, A., 1244.
- n*-Hexadecane**, autoxidation of, A., 1208.
- Hexadecanols**, isomeric, branched, A., 1481.
- Hexadehydrohimbol**, A., 1389.
- Hexadeutero benzene**, A., 967.
 preparation and properties of, A., 852.
 infra-red spectrum of, A., 1189.
 and structure of benzene, A., 1444.
 Raman spectrum of, A., 806, 1189.
 ultra-violet absorption spectrum and ionisation potential of, A., 1189.
 vapour pressure of, A., 1198.
- Hexadeutero benzene**, dinitro-derivatives, A., 967.
- $\Delta^{\alpha\gamma}$ -Hexadialdehyde**, δ -chloro-, A., 731.
- cycloHexadiene**, addition of maleic anhydride to, A., 211.
- $\Delta^{1:3}$ -cycloHexadiene**, Raman spectrum of, A., 281, 611, 807.
 reaction of, with 1-acetoxy-4:9-anthraquinone, A., 217.
- cycloHexadienes**, A., 745.
- $\Delta^{\alpha\gamma}$ -Hexadieneine**, and its derivatives, A., 957, 1221.
- Hexaethylbenzene**, nitration of, A., 1114.
- Hexafluoroantimonic acid**. See under Antimony.
- trans-Hexahydrindene**, A., 971.
- Hexahydro-*p*-anisilide**, 4-amino-, production of, (P.), B., 1085.
- 1:4:4':5:8:9'-Hexahydroanthraquinone**, 2:6- and 2:7-dichloro-, (P.), B., 622.
- Hexahydrobenzanilide**, *m*- and *p*-amino-, and *p*-nitro-, production of, (P.), B., 1085.
- Hexahydrobenz-*o*-anisidide**, 5-amino-, production of, (P.), B., 1085.
- Hexahydrobenz-1-naphthalide**, 4-amino-, and 4-nitro-, production of, (P.), B., 1085.
- Hexahydrobenz-*o*-toluidide**, 5-amino-, and 5-nitro-, production of, (P.), B., 1085.
- Hexahydrobenz-*p*-toluidide**, 2-amino-, production of, (P.), B., 1085.
- Hexahydrocholanthenecarboxylic acid**, ethyl ester, A., 968.
- Hexahydrocinnamaldehyde**, and its derivatives, A., 83.
- Hexahydrocoueic acid**, and its semicarbazone, A., 1350.
- Hexahydro- α -coumaranone**, synthesis of, A., 1503.
- Hexahydrodeoxyscillarenic-*A* acid**, A., 610.
- Hexahydrohemaphyllidine**, A., 227.
- Hexahydrohomoterephthalic acid**, and its magnesium salt, A., 1123.
- Hexahydrohydrindenes**, and their derivatives, stereoisomerism of, A., 971.
 substituted, A., 971.
- Bz*-Hexahydrohydrindene-2-carboxylic acid**, 2-hydroxy-, and its methyl ester and *spiro*-lactide, A., 492.
- trans-Hexahydro- β -hydrindol**, and its salts, A., 971.
- cis*-Hexahydro- α - and - β -hydrindols**, and their derivatives, A., 971.
- Bz*-Hexahydrohydrind-2-one**, and its oxime, A., 492.
- Hexahydro- α -hydrindone**, and its oximes and their benzoyl derivatives, A., 971.
- trans-Hexahydro- β -hydrindones**, A., 971.
- trans-Hexahydro- β -hydrindoxime**, and its benzoyl derivative, A., 971.
- Hexahydro- α -hydrindylamines**, and their acetyl derivatives, A., 971.
- Hexahydro- β -hydrindylamines**, and their derivatives, A., 971.
- Δ^1 -*Bz*-Hexahydroindene-2-carboxylic acid**, A., 492.
- Hexahydro- ζ -methylmorphimethine hydriodide**, A., 99.
- Hexahydro- ϵ -methylmorphimethino-*C* methyl ether**, A., 505.
- Hexahydroproscillaridin-*A***, A., 610.
- Hexahydroproscillaridinic-*A* acid**, A., 610.
- Hexahydropyrone**, A., 844.
- Hexahydrosicillarene-*A***, A., 610.
- β -Hexahydrothiobenzoyl- α -phenyl- α - δ -dimethylhydrazine**, A., 1119.
- β -Hexahydrothiobenzoyl- α -phenyl- α -methylhydrazine**, A., 1119.
- Hexahydro-*p*-toluanilide**, 4-amino-, production of, (P.), B., 1085.
- Hexahydro-*p*-toluic acid**, 3:4-dibromo-, and its ethyl and methyl esters, A., 974.
- n*-Hexaldehyde** *p*-nitrobenzoylhydrazone, A., 1259.
- o*-tolylsemicarbazone**, A., 1259.
- Hexalin**, solvent power of tetralin, decalin, methylhexalin, and, B., 1036.
- Hexamethylbenzene**, nitration of, A., 1114.
- Hexamethylbenzene- ω -hexasulphonic acid**, and its salts, A., 1487.
- 1:2:4:5:6:7-Hexamethylbenziminazole**, A., 1114.
- Hexamethylenetetramine (urotropine)**, structure of, A., 762.
 crystal structure of, A., 286.
 influence of p_H on dissociation of, A., 34.
 compound of, with bismuth iodide, B., 123.
 condensation products of, with formaldehyde and urea, (P.), B., 736.
 resins from condensation of, with phenol, B., 1152.
 salicylate, crystal structure of, A., 1061.
 analysis of, B., 181.
 detection of, in fish conserves, B., 427.
 determination of, A., 1356; B., 984.
 separation of, from formaldehyde, A., 962.
- Hexamethylenetetramine-ethanol**, hydriodide, effect of p_H on dissociation of, A., 34.
- 2:3:4:5:6- ω -Hexamethoxyacetophenone**, A., 91.
- 1:3:3':1':3':3'-Hexamethylindodicarbocyanine iodide**, preparation of, A., 223.
- 1:3:5:1':3':5'-Hexamethyl-7:7'-*o*-phenylene-oxacarboxyanine iodide**, (P.), B., 843.
- isoHexamidine hydrochloride**, A., 487.
- Hexane**, ultra-violet absorption spectra of mixtures of acetone and, A., 145.
 ultra-violet absorption spectra of mixtures of ethyl thiocyanate and, A., 428.
 electric moment of, A., 567.
- Hexane**, viscosity of mixtures of, with nitrobenzene, A., 927.
 equilibrium of, with hexene, A., 165.
- Hexanes**, determination of, by chlorination, A., 728, 1102.
- n*-Hexanes, tetrahydroxy-**, A., 194.
- cycloHexane**, and its derivatives, spatial configuration of, A., 333.
 rings, multiplanar, A., 1236, 1495.
 fluorescence of, A., 11, 1446.
 cryoscopic constant of, A., 931.
 physical properties of mixtures of, with aniline, A., 25, 438, 695.
 vapour pressure of mixtures of, with ethyl alcohol, A., 576; B., 484.
 derivatives, Raman effect in, A., 564.
 isomerisation of, by aluminium chloride, A., 1358.
- cycloHexane, hexachlorohexafluoro-**, A., 204.
- 1:2:3:4-tetrahydroxy-**, and its tetra-acetyl derivative, A., 194.
- polyhydroxy-**, constitution of, A., 194.
- cycloHexanes**, thermal decomposition of, A., 73.
- n*-Hexane- α -arsinic acid**, dissociation constants of, A., 446.
- n*-Hexane- α -arsinic acids, γ -chloro-**, A., 333.
- cycloHexane-1-carboxylic acid**, 1-amino-, ethyl ester, and its derivatives, A., 858.
- cycloHexane-1-cyanoacetic-2- β -propionic acid**, dimethyl ester, A., 1239.
- cycloHexane-1:2-diacetic acid**, 1-hydroxy-, diethyl ester, A., 860.
- dl*-trans-cycloHexane-1:2-diacetic acid**, cinchonidine salt, A., 1240.
- trans-cycloHexane-1:2-diacetic acids**, A., 1240.
- d*- and *l*-trans-cycloHexane-1:2-diacetic acids**, A., 971.
- cycloHexane-2:6-dicarboxylic acid**, ethyl ester, synthesis of, A., 1497.
- cycloHexane-1:2-dicarboxylic acids**, 1-chloro-2-hydroxy-, and 1:2-dihydroxy-, and their acetyl derivatives, and 1-hydroxy-, acetyl derivative, and their derivatives, A., 82.
- 1:2-cycloHexanediols**, and related compounds, A., 1493.
 dehydration of, A., 340.
 esters, A., 1494.
- cycloHexane-1:4-dione**, 2:3:5:6-tetrabromo-, and -tetrachloro-, A., 982.
- cycloHexane-1:1:2:4:4:5-hexacarboxylic acid**, hexamethyl esters, A., 475.
- n*-Hexane- $\alpha\omega\delta\delta$ -tetracarboxylic acid**, ethyl ester, A., 961.
- cycloHexane-1:1:4:4-tetracarboxylic acid**, and its ethyl ester, A., 961.
- cycloHexane-1:2:4:5-tetracarboxylic acid**, and its methyl ester, A., 475.
- cycloHexanol**, preparation of, A., 208.
 esterification of, A., 208.
 reduction of, A., 339.
 use of, in colorimetric determination of molybdenum, A., 56.
- cycloHexanol**, 2-chloro-derivatives, and their *n*-aphthylurethanes, A., 486.
- isoHexan-8-ol- β -one**, formation of ditertiary diols from, by Grignard reagents, A., 193.
- dl*-cycloHexan-1-ol-2-trimethylammonium iodide**, A., 1494.
- Hexanone**, uses of, in lacquer industry, B., 91.
- Hexan- ϵ -one, α -chloro- β -hydroxy-**, and its derivatives, A., 352.
- cycloHexanone**, condensation of, with ethyl bromoacetate, A., 979.
 plasticisation of cellulose ester films with, (P.), B., 110.
 anil, A., 336.

- cyclo*Hexanone *m*-nitrobenzhydrazide, A., 743.
N-nitroguanylimine, A., 769.
 thioisoxime, A., 868.
*cyclo*Hexanone, oximino-, A., 870.
 nitrite, A., 1494.
*cyclo*Hexanone-2-acetic acid, and its ethyl esters, and their semicarbazones, A., 1495, 1503.
*cyclo*Hexan-2-one-1-acetic acid, and its ethyl ester and derivatives, A., 860.
*cyclo*Hexanone-2-carboxylic-2-acetic acid, diethyl ester, A., 1495, 1496, 1503.
*cyclo*Hexan-2-one-1-carboxylic-2-acetic acid, diethyl ester, A., 860.
*cyclo*Hexan-1-one-3:4-dicarboxylic acid, and its semicarbazone, A., 1221.
*cyclo*Hexanone-3-nitro-4-pyridylhydrazone, A., 993.
*cyclo*Hexanonetricarboxylic acid, trimethyl ester, A., 475.
 2:4:6:2':4':6'-Hexaphenylbenzhydrol, A., 493.
 2:4:6:2':4':6'-Hexaphenylbenzophenone, A., 493.
 $\alpha\alpha\beta\beta\beta$ -Hexaphenylbutane, A., 77.
 2:4:6:2':4':6'-Hexaphenyldiphenyl, A., 493.
 Hexaphenylethane series, fission in, A., 852.
 $\Delta^{\alpha\gamma}$ -Hexatriene, β -chloro-, A., 958.
 Δ^{α} -Hexendi- Δ^{β} -hexenylacetal, A., 796.
 Δ^{α} -Hexene, catalytic isomerisation of, A., 324.
*cyclo*Hexene, polymerisation of, A., 480.
 thermal decomposition of, A., 73.
 compounds of, with aromatic hydrocarbons and their chloro-derivatives, (P.), B., 716.
cis- and *trans*-chlorohydrins. See *cyclo*-Hexanol, 2-chloro-derivatives.
 oxide, reaction of, with magnesium dimethyl and diethyl, A., 208.
*cyclo*Hexene, hexachlorotetrafluoro-, A., 204.
*cyclo*Hexene-1:2-diacetic acid, and its diethyl ester, A., 860.
 Δ^3 -*cyclo*Hexene-1:2-diol, constitution of, A., 746.
 Δ^3 -*cyclo*Hexene-1:4-dione, 2:3-dibromo-, and 2:3-dichloro-, A., 982.
 Δ^2 -*n*-Hexenoic acid, preparation of, and its ethyl ester, A., 195.
 Δ^{α} -*iso*Hexenoic acid, α -bromo-, A., 1105.
 Δ^{β} -Hexen- α -ol, action of, from tea leaves, A., 1159.
 $\Delta^{\beta\gamma}$ -Hexenols, natural and synthetic, and their derivatives, A., 844.
*cyclo*Hexenones, substituted, synthesis of, A., 1498.
 Δ^{α} -Hexenonitrile, A., 1228.
 Δ^{γ} -Hexenyl bromide, A., 751.
 chloride and iodide, A., 67.
*cyclo*Hexenyl benzoate, 2-bromo-, A., 1223.
 butyrate, 2-bromo-, A., 1222.
 4- Δ^2 -*cyclo*Hexenylamino-1-phenyl-2:3-dimethyl-5-pyrazolone, (P.), B., 974.
 β - Δ^1 -*cyclo*Hexenylethyl alcohol, and its 3:5-dinitrobenzoate, A., 756.
 β - Δ^1 -*cyclo*Hexenylethyl bromide, A., 756.
 β - Δ^1 -*cyclo*Hexenylethylcyclohexanol, A., 756.
 4- Δ^2 -*cyclo*Hexenylmethylamino-1-phenyl-2:3-dimethyl-5-pyrazolone, (P.), B., 974.
 α -Hexenyl- β -methyl- β -hydroxyadipic acid, ethyl ester, γ -lactone of, (P.), B., 1130.
 Hexetone, isomerides and derivatives of, A., 1498.
n-Hexoic acid, ϵ -amino- α -thiol-, benzoyl derivative, hydrochloride, A., 851.
 δ -bromo-, ethyl ester and $\gamma\delta$ -dibromo-, A., 195.
*iso*Hexoic acid, $\alpha\beta$ -tribromo, A., 1105.
 Hexolactone, ϵ -hydroxy-, A., 1351.
 Hexose diphosphate, action of tumour extracts on, A., 1148.
 phosphates, absorption of, in intestines, A., 521.
 Hexoses, enzymic oxidation of, in presence of adenosinetriphosphoric acid, A., 1276.
 transformation of, into inositol, A., 1225.
 formation of levulic acid from, A., 607.
 action of phosphates on, A., 734.
 inter-conversion of, in plants, A., 420.
 specific dynamic action and oxidation of, in the organism, A., 240.
 Hexosediphosphoric acid, influence of yellow respiratory enzyme on dehydrogenation of, by yeast-dehydrogenase, A., 1161.
 action of, with dihydroxyacetonephosphoric acid, A., 403, 897.
 decomposition of, by enzymes of tobacco leaves, A., 403.
 Hexosephosphoric acid, activation of, by red blood-cells, and its restriction by phosphate, A., 400.
 Hexosephosphoric acids, anaërobic decomposition of, by animal tissues, A., 402.
 Hexosidases, specificity of, A., 1169.
 Hexotrilactone, ϵ -hydroxy-, A., 1351.
 Hexuronic acids, natural, methylglucosides of, A., 732.
 Hexyl alcohol, ζ -chloro-, (P.), B., 1131.
 Hexyl bromide, preparation of, A., 1348.
 chlorosulphonate, sulphate, and sulphite, A., 729.
*cyclo*Hexyl bromide, preparation of, A., 193, 1348.
 esters, 2-bromo-, A., 857.
 groups, rotations of configuratively related carboxylic acids containing, A., 1122.
 Δ^3 -*cyclo*hexenyl ether, A., 745.
 δ -*cyclo*hexylbutyl and γ -*cyclo*hexylpropyl ethers, A., 483.
 2:4-dinitrophenyl sulphide, A., 1349.
 sulphite, A., 480, 1492.
 thiocyanate, A., 470.

n-*n*-Hexylacetophenone, A., 1369.
*cyclo*Hexylamine, catalytic action of Japanese acid earth on, A., 44.
 4-*cyclo*Hexylaminoanthraquinone-2-sulphonic acid, 1-amino-, production of, (P.), B., 895.
 1-*cyclo*Hexylaminobenzthiazole, manufacture of, (P.), B., 444.
 4-Hexylamino-2-naphthyl β -diethylaminoethyl ether, (P.), B., 1132.
*cyclo*Hexylammonium phosphate, A., 122.
*cyclo*Hexyl- β -anisylcarbinol, A., 1240.
tert-Hexylbenzene, p -amino-, and its salts and derivatives, A., 1488.
 α -*cyclo*Hexylbutane- $\alpha\gamma$ -diol, A., 198.
 δ - β -*cyclo*Hexylbutyric acid, A., 1122.
 α -Hexyl- γ -butyrolactone, A., 474.
 α -*sec*-Hexyl- γ -butyrolactone, A., 474.
 9-*cyclo*Hexylcarbazole, manufacture of, (P.), B., 1134.
*cyclo*Hexylcarbinol, reaction of, with benzene, in presence of aluminium chloride, A., 80.
 β -*cyclo*Hexylcarboxy- α -phenyl- α -methyl hydrazide, A., 1360.
n-Hexyldichloroarsine, A., 446.
 6-Hexyl-*m*-cresol, anthelmintic action of, A., 1412.
 Hexyldiethylamine, ζ -bromo-, and its hydrochloride, A., 990.
n-Hexyldihydrophenarsazine, A., 446.
 4-Hexyldihydroresorcinol, (P.), B., 606.
 4-*cyclo*Hexyldihydroresorcinol, (P.), B., 606.
*cyclo*Hexyldimethylcarbinol, 1-amino-, and its hydrochloride, A., 858.
 1-*cyclo*Hexyl-2:3-dimethyl-5-pyrazolone, and its 4-nitro-, -methylamino-, and -dimethylamino-derivatives, (P.), B., 974.
 2-*cyclo*Hexyl-6:8-dimethylquinoline-4-carboxylic acid, and its salts, A., 1251.
*cyclo*Hexyl-*n*-dodecylamine, and its hydrochloride, A., 70.
*cyclo*Hexyl ethyl ketone, 1-amino-, and its hydrochloride, A., 858.
 1-*cyclo*Hexyl ethyl ketone, 1-nitroso-, A., 1481.
 β -*n*-Hexylethylpyridinium bromide, β -hydroxy-, and its hydrate, and perchlorate, β -hydroxy-, A., 1131.
 5-*cyclo*Hexyl-5-ethyl-2-thiobarbituric acid, A., 1507.
 9-*cyclo*Hexylfluorene, A., 741.
 β -*cyclo*Hexylglucoside, biosynthesis of, A., 609.
*cyclo*Hexylidene-1-cyanoacetic-2- β -propionic acid, dimethyl ester, A., 1239.
*cyclo*Hexylidenecyclopentadiene, and its dimeride, A., 852.
 Hexylmalonic acid, diethyl ester, A., 474.
 ϵ -*cyclo*Hexyl- γ -methylamyl alcohol, A., 1121.
 ϵ -*cyclo*Hexyl- γ -methylamyl bromide, A., 1121.
 δ - β -*cyclo*Hexylmethyl-*n*-butane, and its ethyl ester, A., 1121.
 γ -*cyclo*Hexylmethyl-*n*-butyl alcohol, A., 1121.
 δ -*cyclo*Hexyl- β -methylbutyl alcohol, A., 1121.
 γ -*cyclo*Hexylmethyl-*n*-butyl bromide, A., 1121.
 δ -*cyclo*Hexyl- β -methylbutyl bromide, A., 1121.
 δ - β -*cyclo*Hexylmethyl-*n*-butyric acid, and its ethyl ester, A., 1121.
 γ -*cyclo*Hexyl- α -methylbutyric acid, and its ethyl ester, A., 1121.
*cyclo*Hexyl methyl ketone, 1-amino-, and its hydrochloride, A., 858.
 1-*cyclo*Hexyl methyl ketone, 1-nitroso-, A., 1481.
 δ - α -*cyclo*Hexylmethylpropionic acid, A., 1121.
 δ - β -*cyclo*Hexylmethylpropyl alcohol, A., 1121.
 δ - β -*cyclo*Hexylmethylpropyl bromide, A., 1121.
 1-*cyclo*Hexyl-3-methyl-5-pyrazolone, production of, (P.), B., 974.
 δ -*cyclo*Hexyl- β -methyl-*n*-valeric acid, and its ethyl ester, A., 1121.
*cyclo*Hexyl α -oximinoethyl ketone, A., 1481.
 β -*cyclo*Hexyloxyethylmalonic acid, ethyl ester, A., 483.
m-*cyclo*Hexyloxyphenyl β -diethylaminoethyl ether, (P.), B., 1132.
 γ -*cyclo*Hexyloxypropyl alcohol, A., 483.
 γ -*cyclo*Hexyloxypropylmalonic acid, ethyl ester, A., 483.
 2-*n*-Hexylphenol, 4-bromo-, production of, (P.), B., 749.
 4-*n*-Hexylphenol, 2-chloro-, and its α -naphthoate, (P.), B., 974.
*cyclo*Hexylphenol, chloro-, mercury ethyl salt, A., 202.
 2-*cyclo*Hexylphenylacetic acid, 2-hydroxy-, and its ethyl ester, A., 1496.
 4-*n*-Hexyl-*Bz*-1-phenylbenzanthrone, A., 1124.
 4-*cyclo*Hexyl-*Bz*-1-phenylbenzanthrone, A., 1124.
 α -*p*-*cyclo*Hexylphenylbutan- γ -ol, A., 198.
 9-*p*-*cyclo*Hexylphenylfluorene, 9-chloro-, A., 1358.

- cyclo*Hexyl phenyl ketone, 1-amino-, and its hydrochloride, A., 858.
p'-Hexylphenyl styryl ketone, A., 1369.
d-*cyclo*Hexylpropionic acid, and its ethyl ester, A., 1122.
l-*cyclo*Hexyl-*n*-propyl alcohol, A., 1122.
l-*cyclo*Hexyl-*n*-propyl bromide, A., 1122.
γ-*cyclo*Hexylpropyl *n*-butyl ether, A., 483.
2-*cyclo*Hexylquinoline, and its picrate, A., 1251.
2-*cyclo*Hexylquinoline-4-carboxylic acid, and its salts and esters, and 6-iodo-, and its nitrate, A., 1251.
Hexylresorcinol, toxicity of, A., 1421.
5-Hexyl-β-resorcylic acid, A., 1364.
*cyclo*Hexylvinylethynylcarbinol, manufacture of, (P.), B., 347.
Hibernation, A., 519.
Hibiscus moscheutos. See Rose mallow.
Hides, treatment of, (P.), B., 242, 323, 865*. with emulsions of petroleum products, B., 418.
bating of, B., 600.
analysis of enzymic bating materials for, B., 1105.
curing of, (P.), B., 739.
in Austria, B., 322.
treatment of salts for, B., 114.
degreasing of, (P.), B., 115.
fat-liquoring of, B., 469.
impregnation of, with rubber solutions, (P.), B., 371.
liming of flesh side of, B., 468.
liming and pickling of, B., 817.
pickling of, regeneration of salt from, B., 419.
use of fish entrails for softening and unhairing of, B., 114.
sulphiding of, without soaking, B., 644.
tanning of, (P.), B., 739, 864.
after treatment with buffer solutions, B., 114.
drum tanning of, B., 916.
optical properties of tanned fibres of, B., 818.
unhairing of, (P.), B., 777, 864.
salt mixtures for preservation of, (P.), B., 305.
apparatus for preservation and tanning of, (P.), B., 929.
non-parasitic eczema damage to, B., 513.
protection of, against skin beetle, B., 1007.
ammonia content of, B., 644.
reaction of, with basic chromium salt solutions, B., 323.
manufacture of glue from, B., 564.
cow, tanning of, with sulphite-cellulose extract ZNIKP No. 1, B., 241.
raw, treatment of, (P.), B., 371.
absorption of salt in layers of, during curing, B., 863.
curing of, in Australia, B., 1007.
soaking of, (P.), B., 864.
effect of pretreatment on fixation of tannin in, B., 419.
effect of neutral salts on, B., 35.
preservation of, (P.), B., 323.
by silver, B., 1007.
protection of, against moths and dermestids, B., 418.
production of sausage skins, etc., from, (P.), B., 739.
salted, morphology of bacteria causing reddening of, B., 644.
analysis of, B., 817.
determination of quality of, B., 817.
determination in, of ash, fat, and water, B., 241.
steer, lipins of, B., 114.
Hides, tawed, accelerated tanning of, with oak extract, B., 916.
unhaird, influence of p_H of solution on firmness of, B., 70.
wet, setting of, (P.), B., 1106.
Hide powder, formaldehyde-treated, adsorption of hydrochloric acid by, B., 281.
Hinokinin, enantiomorphism of cubebinolide and, A., 1128.
Hippuric acid, condensation of, with veratraldehyde, A., 747.
action of aromatic hydroxysulphonic acids on, A., 970.
α-Hippuryl-*ε*-carbobenzyloxy-*l*-lysine, and its derivatives, A., 1417.
α-Hippuryl-*ε*-carbobenzyloxy-*l*-lysylglycine, ethyl ester, A., 1417.
α-Hippuryl-*l*-lysylglycine, ethyl ester hydrochloride, A., 1417.
Hiragonic acid, constitution of, A., 960.
Histaminase, A., 659.
Histamine, and its derivatives, manufacture of, (P.), B., 829.
oxidation of, electrolytically, A., 92.
complex gold salts, A., 1227.
flavinate, A., 639.
derivatives, action of, A., 1156.
test meals with, A., 116.
effect of, on secretion of bile, A., 648.
on acid-base ratio of blood, gastric juice and urine, A., 512.
on blood-cholesterol, A., 116.
on blood-sugar in adrenalectomy, A., 116.
effect of acid gastric juice on blood-sugar after injection of, A., 116.
action of, in inflammation, A., 650.
on metabolism, A., 543.
on guinea-pig's uterus, A., 780.
content of, in lungs, A., 1422.
destruction of, by lungs, A., 783.
substance like, from excitation of nerves, A., 528.
from excitation of splanchnic nerve, A., 1534.
in shock and vasodilation, A., 651.
Histidine, oxidation of, electrolytically, A., 92.
substitution in, A., 1122.
disflavinate, A., 639.
action of commercial preparations of, A., 1532.
antiglyoxalase action of, A., 1026.
in urine of pregnant women, A., 1525.
determination of, by diazo-reaction, A., 370.
l-Histidine, benzenesulphonyl derivative, A., 101.
d- and *l*-Histidines, effect of, on growth, A., 113.
Histozyne, reversibility of action of, A., 659.
Hive-mites. See *Galleria mellonella*.
Hiyeol, B., 463.
Hoesch reaction, use of ether as solvent for aluminium chloride in, A., 63.
Hoffmann Stösse, frequency distribution of size of, A., 1442.
Hofmann degradation, Wagner rearrangement in, A., 853.
Holarrhena antidysenterica, alkaloids from, A., 365, 996.
resinols of latex of, A., 1244.
Holmium, nuclear moment of, A., 424.
Holocaine, amidines of type of, and their derivatives, A., 1490.
Holocellulose, A., 268.
Homo-acids, A., 976.
Homo-amines, A., 976.
Homocystine, synthesis of, A., 1486.
d- and *l*-Homocystines, and their relation to methionines, A., 737.
availability of, for growth, A., 890.
Homoeopathic triturations, identification of, A., 462.
Homoeopathy and colloid chemistry, A., 380.
Homocapofenchocamphoric acid, A., 1246.
Homogenisers, (P.), B., 83.
Homomethionine, physiological availability of, A., 389.
Homonaphthalic acid, A., 618.
"Homonaphthol AS." See 3-Naphthylacetanilide, 2-hydroxy-.
Homophthalaldehyde, condensation of, to 2-phenylnaphthalene-5:2'-dialdehyde, A., 1123.
Homophthalic anhydride, sodium enolate, reaction of, with aromatic aldehydes, A., 344.
r-Homopilopic acid, synthesis of, A., 872.
d-Homopilopic acid, synthesis of, A., 872.
Homopolar compounds, electrical conductivity of, A., 683.
Homopterocarpin, A., 1372.
2,4-dinitrophenylhydrazones, A., 218.
p-Homosalicylaldehyde *o*-tolylsemicarbazone, A., 1259.
p-Homosalicylaldehyde as reagent for copper, A., 720.
Homosyringic acid. See 3:5-Dimethoxyphenylacetic acid, 4-hydroxy-.
Homoterephthalic acid, dimethyl ester, A., 1123.
Homothyroxine, A., 410.
6-Homoveratramidoveratraldehyde, A., 1134.
2-Homoveratrylquinazoline, 4-chloro-, A., 760.
Homoveratryl-4-quinazolone, A., 760.
Honey, determination of origin of, B., 378.
microscopy of, B., 169, 875.
fermentation of, B., 379.
arsenic in, after arsenical dusting of crops, B., 428.
use of, in manufacture of fermented beverages, B., 1017.
British Guiana, composition of, B., 875.
heather, thixotropy of, B., 605.
Italian, composition of, B., 1116.
natural and synthetic, differentiation of, B., 378.
diastase in mixtures of, B., 428.
Hops, manuring of, B., 567.
composting and manuring trials with residues from, B., 689.
corrosion of wire in gardens of, B., 1011.
drying of, B., 424.
effect of brewing liquor on boiling of, B., 1112.
extracts of, B., 569.
preservative principles of, B., 474.
colorimetric determination of preservative value of, B., 40.
control of red-spider mites on, B., 1012.
Belgian and foreign, comparison of, B., 1015.
detection in, of pectin, B., 779.
Hopkins-Cole reaction, use of glyoxylic acid derivatives in, A., 65.
Hoplocampa testudinea, control of, on apples, B., 1013.
Hordein, in malt, B., 744.
Hormones, A., 1170.
structure of, A., 792.
as protein complexes, A., 122.
extraction of, from animal and vegetable materials, (P.), B., 1150.

- Hormones**, production of, (P.), B., 654.
 powder preparations of, (P.), B., 1068.
 action of, on growth of cell cultures, A., 668.
 on reduced glutathione in blood and tissues, A., 540.
 on intestinal absorption, A., 540, 1172.
 relation of, to vitamins, A., 1034.
 acyloctahydrofollicle, production of, (P.), B., 333.
 adrenal cortex, preparation of, A., 789.
 relation of, to vitamins, A., 539, 666.
 influencing carbohydrate metabolism, A., 665.
 biological standardisation of, A., 538.
 See also Cortin.
 blood, physico-chemical state of, A., 1284.
 corpus luteum, A., 129, 413, 666, 791, 902.
 nomenclature of, A., 1284.
 polymorphic forms of, A., 260.
 formation of, from pregnandiol, A., 216.
 preparation of, A., 128.
 from stigmasterol, A., 260.
 synthesis of, A., 128.
 production of, (P.), B., 524.
 purification of, (P.), B., 1068.
 crystallography and refractometry of, A., 1195.
 effect of, on uterine activity of rabbits, A., 666.
 cortical, treatment with, in adrenalectomy, A., 1421.
 "fat-metabolism," hyperglycæmia from, A., 411.
 follicle-stimulating, protein nature of, A., 542.
 action of, on ovary and sex accessories of fowls, A., 1426.
 follicular, isolation of, (P.), B., 925, 974.
 production of, (P.), B., 254.
 production of concentrated aqueous solutions of, (P.), B., 1068.
 manufacture of hydrogenation products of, (P.), B., 750.
 production of hydrogenation products and derivatives of, (P.), B., 654, 655.
 follicular and luteal, biological control of, A., 1284.
 germinal gland, production of therapeutic alcohols from, (P.), B., 1068.
 gonadotropic, A., 1032.
 age factor in response to, A., 1424.
 concentration of, in blood-serum, in pregnancy, A., 1426.
 combination of, in blood-serum, A., 667.
 effect of, in gestation and lactation, A., 791.
 on gonads of immature pigeons, A., 412.
 on oöstrous cycle, A., 666.
 on ovarian development, A., 412.
 reduction of thymus by, A., 412.
 evaluation of preparations of, A., 1284.
 in pregnant mares, A., 128.
 of pregnancy urine, assay of, A., 1545.
 growth, effect of, on brain of albino rats, A., 666.
 effect of sex hormones on, A., 902.
 inactivation of, A., 259.
 insulotropic, from intestinal mucosa, A., 411.
 liver, detoxicating, A., 538.
 lutemising, effect of, on blood cholesterol, A., 1174.
 melanophoric, A., 259.
 in colostrum, A., 126.
 action of, on frog's eyes, A., 1422.
- Hormones**, oestrogenic, synthesis of, A., 74.
 chemistry of, A., 1173.
 synthesis of compounds related to, A., 752.
 effect of, on plant tumours, A., 1431.
 of pregnancy urine, effect of, on young rats, A., 413.
 ovarian, production of, (P.), B., 525.
 in relation to carbohydrate metabolism, A., 1284.
 uterine growth from injections of, A., 542.
 action of, on lachrymal elimination of sodium chloride, A., 1034.
 ovarian and testicular, production of, (P.), B., 924.
 pancreatropic, action of, on blood-sugar, A., 1172.
 parathyroid. See Parathormone.
 pituitary, A., 667.
 effect of, on blood-sugar, A., 1424.
 adrenotropic, A., 128, 412.
 fat-metabolism, A., 541.
 growth, physiological action of, A., 1424.
 effect of, on glutathione concentration, A., 1031, 1424.
 on dwarf mice, A., 1171.
 oxytocic, in dog- and ox-serum, A., 1284.
 rat's, A., 543.
 thyrotropic, effect of, on anti-thyroid protective action of blood, A., 1544.
 anterior pituitary, anti-thyroid action of, A., 541.
 acquired resistance to, A., 1424.
 effect of, on metabolism, A., 1423.
 of hypothalamus of dogs, A., 1424.
 carbohydrate-controlling, A., 411.
 carbohydrate- and fat-controlling, action of, on liver-glycogen and blood-ketones, A., 411.
 corticotropic, A., 667.
 fat-controlling, acetonaemia from treatment with, A., 411.
 gonadotropic, A., 128.
 effect of, on blood-cholesterol, A., 667.
 sex comparison of, from rats, A., 1424.
 growth, effect of, on protein metabolism, A., 541.
 thyrotropic, A., 1283.
 effect of, on basal metabolism, A., 1423.
 hypoglycæmia produced by, A., 541.
 anterior pituitary and pineal, effect of, on growth of tumours, A., 886.
 posterior pituitary, lesions produced by doses of vasopressor fraction of, A., 1284.
 oxytocic, A., 542, 1424.
 sex, A., 346, 1125, 1371, 1426.
 and related substances, A., 1242.
 effect of, on growth of plants, A., 1548.
 on chlorine economy, A., 667.
 relation between vitamin-E and, A., 261.
 and cancer, A., 1400.
 from pregnancy urine, A., 667.
 detection and determination of, colorimetrically, A., 1032.
 female, manufacture of, (P.), B., 206.
 biological action of, A., 413.
 male, A., 1032.
 preparation of, A., 1174.
 artificial preparation of, A., 346, 1427.
 steric inversion of, A., 1125.
 action of, A., 129.
 oestrogenic activity of, A., 414.
- Hormones**, sex, male, specificity of activity of, A., 1125.
 difference between extracts of, from urine and from testes, A., 414.
 effect of injection of, on anterior pituitary, A., 1285.
 on accessory reproductive organs of castrated rats, mice, and guinea-pigs, A., 1033.
 in the female body, A., 1285.
 crystalline, A., 413.
 assay of, with albino rats, A., 1033.
 of suprarenal cortex, manufacture of, (P.), B., 1118.
 testicular, A., 1500.
 in blood, A., 1032.
 from urine, A., 260.
 assay of, A., 1427.
 thyroid, in blood of pregnancy, A., 258.
 thyrotropic, influence of ovary on secretion of, A., 541.
 and basal metabolism, A., 541.
 effect of, on blood, A., 1543.
 on blood and urine constituents, A., 790.
 on ketone substances in blood, A., 258.
 on carbohydrate metabolism, A., 1032.
 in obesity, A., 887.
 on serum-cholesterol, A., 541.
- Hormozymes**, A., 1161.
Horn, substitute for, (P.), B., 721.
Horn materials, bleaching of, (P.), B., 819.
Hornblende, synthesis of, at low pressures, A., 190.
Hornblendite, genesis of, A., 1477.
Horses, mineral requirements of, A., 114.
 digestive factors of oats and lucerne-clover mixtures for, B., 251.
 control of internal parasites in, B., 375.
 Western range, abdominal fat of, A., 233.
 working, swedes as substitutes for oats in feeding of, B., 282.
Horse chestnuts, hydrolysis of phytin compounds from seeds of, A., 134.
Horse radish, vitamin-C in, A., 1287.
Horse-radish juice, B., 524.
Horse-sickness, A., 1420.
Horse-tail, detoxication of, B., 699.
 "Duwock" poison "equisetin" for control of, B., 690.
 "Hoshii," storage of, B., 520.
Hosiery, silk, colour spots on, B., 847.
Hot plate, A., 1217.
Hsi-hsin, constituents of, A., 1433.
Hsien ts'ai. See Amaranth, Chinese.
Huang Yen Chü, composition of ripening, A., 268.
Huckleberries, stored, vitamin-C in, A., 417.
Humic acid, crystal structure of, and its relation to lignin and coal, A., 1451.
 iron salt, B., 402.
Humic acids, A., 1202, 1320.
 formation of, from methylglyoxal, A., 67.
 absorption by, A., 819.
 from bituminous coal, equivalent and mol. wt. of, B., 534.
 from lignite and from sucrose, constitution of, A., 623.
 natural, nitrogenous constituents of, B., 1059.
 from peat, isolation and study of, B., 533.
 characterisation of, B., 1156.
 determination of, in peat, B., 52.
Humic substances, B., 484, 791, 1032.
Humidity, slide rule for calculation of, A., 1343.
 chamber for maintaining constancy of, B., 530.

- Humulene**, nitroso-, A., 90.
- Humus**, rôle of micro-organisms in formation of, B., 243.
- production of, from stall manures, B., 1107.
- humic acids in chemistry of, B., 324, 372.
- of soils, B., 646.
- supply of, to soils, B., 514.
- biologically active, B., 514.
- determination of, in soils, B., 646.
- Humus extracts**, relationship between colour and oxidation values of, B., 740.
- Hurter Memorial Lecture**, B., 225.
- Hyacinths**, effect of progynon on time of blooming of, A., 1431.
- water-, rotting of, B., 247.
- Hyalite**, Japanese, fluorescence of, in ultra-violet light, A., 468.
- Hydantoin derivatives**, formation of, A., 992.
- Hydantoins**, catalysis of condensation of, with aromatic aldehydes, A., 628.
- Hydatic fluid**, composition of, A., 775.
- Hydnum aspratium*, organic bases of, A., 673.
- Hydrastinine**, elimination of, in bile and urine, A., 1274.
- chloride, synthesis of, B., 477.
- determination of, mercurimetrically, A., 999.
- Hydrates**, effect of formation of, on diamagnetism, A., 1311.
- dehydration of, A., 447.
- Hydratopectin**, manufacture of, (P.), B., 972.
- Hydraulic liquids**, (P.), B., 1027.
- Hydrazides**, quaternary ammonium, manufacture of, (P.), B., 840.
- Hydrazidoacetylpyridinium chloride**, production of, (P.), B., 840.
- Hydrazidoacetotrimethylammonium chloride**, production of, (P.), B., 840.
- Hydrazine**, A., 303.
- and its derivatives, dipole moments of, A., 1304.
- absorption spectrum of, A., 1188.
- oxidation of, A., 313.
- action of, on cyclic carbamides, A., 869.
- addition of, to nickel pyrophosphate, A., 717.
- trinitride, equilibria of, with ammonia, A., 35.
- p*-**Hydrazinobenzoic acid**, ethyl ester, A., 78.
- Hydrazinodiacetonitrile**, A., 72.
- Hydrazinodimethanesulphonic acid**, sodium salt, and its diacetyl derivative, A., 72.
- α -**Hydrazinosulphonic acids**, acetylation of, A., 71.
- Hydrazobenzene**, preparation of, A., 743.
- Hydrazobenzene**, 2:2'-diamino-5:5'-dihydroxy-, 2:2':5:5'-tetraacetyl derivative, A., 1508.
- 3:3'-dinitro-, A., 338.
- Hydrazo-compounds**, oxidation of, by iodine, A., 41.
- adducts from acetylenedicarboxylic esters and, A., 1251, 1252.
- 1:4-*endo*-**Hydrazocyclohexene-N,N'**-dicarboxylic acid, diethyl ester, A., 1133.
- Hydrazohydroxamic acids**, A., 855.
- Hydrazoic acid**. See **Azoimide**.
- Hydrazones**, formation of, A., 963.
- basic properties of, A., 1367.
- separation of, by adsorption, A., 743.
- Hydrazonium salts**, heats of solution of, A., 303.
- heat capacities of aqueous solutions of, A., 303.
- 2:2'-Hydrazo-5:6:7:8:5':6':7':8'-octahydronaphthalene, A., 482.
- Hydrazotoluene**, trifluoro-, oxidation of, by iodine, A., 41.
- Hydrides**, isotope effect in band spectra of deuterides and, A., 676.
- diatomic, Morse formula for, A., 569.
- l*-**trans**-**Hydrindane**, A., 1240.
- Hydrindanes**, stereochemistry of, and 5-hydroxy-, and their derivatives, A., 208.
- cis*-**Hydrindan-4-one**, and its semicarbazone, A., 208.
- l*-**trans**- β -**Hydrindanone**, and its semicarbazone, A., 1240.
- Hydrindene**, chlorohydroxy-, production of, from indene from Donetz benzol, B., 714.
- nitro-5-hydroxy-derivatives, and their methyl ethers, A., 1361.
- Hydrindene glycol**, production of, from indene from Donetz benzol, B., 714.
- Hydrindeneacetic acids**, hydroxy-, α -substituted, inversion of, A., 343.
- α -**Hydrindene-4-one**, synthesis of, from δ -ketosebacic acid, and its derivatives, A., 215.
- 1-**Hydrindone**, 2-amino-, and its hydrochloride and picrate, (P.), B., 796.
- Hydrindones**, chlorinated, A., 1368.
- 1-**Hydrindoneoxime** *p*-toluenesulphonate, (P.), B., 796.
- 2-1'-**Hydrindyl- α -naphthoic acid**, A., 1117.
- Hydriodic acid**. See under **Iodine**.
- Hydroabietyl alcohols**, manufacture of, (P.), B., 796.
- Hydroaromatic compounds**, A., 500.
- syntheses of, A., 1251.
- with angular methyl groups, synthesis of, A., 983.
- iso*-**Hydrobenzoins**, optically active, A., 1234, 1493.
- Hydrobromic acid**. See under **Bromine**.
- Hydrocarbons**, C_8H_{14} , from interaction of crotonyl bromide and its magnesium derivative, A., 728.
- $C_{15}H_{22}$, from ϵ -(2:2:6-trimethylcyclohexyl)- γ -methyl-*n*-amyl bromide and acetoacetic ester, A., 978.
- $C_{18}H_{16}$, Diels', constitution of, A., 75, 76, 335.
- from dehydrogenation of sterols and genins, A., 481.
- $C_{16}D_{12}$, A., 1358.
- $C_{20}H_{26}$, from chlorination of *trans*-2-ketodecahydronaphthalene, A., 84.
- $C_{25}H_{34}$, from degradation of sterols, A., 617.
- Diels', constitution of, A., 74, 75, 76.
- $C_{26}H_{36}$, from degradation of sterols, A., 617.
- $C_{27}H_{38}$, from degradation of sterols, A., 617.
- $C_{30}H_{52}$, from cerin and friedelin, A., 1373.
- Hydrocarbons**, structure of, A., 917.
- linking energies of, A., 284.
- isomerisation of, A., 728, 1102.
- formation of, by reduction of aliphatic ketones, A., 1224.
- energies of, A., 448.
- synthesis of, from water-gas, B., 54.
- production of, (P.), B., 441, 1034.
- from asphalt, B., 709.
- from carbonaceous materials, B., 1125, (P.), B., 260.
- by heat treatment of carbonaceous materials, (P.), B., 891.
- by hydrogenation of carbonaceous materials, (P.), B., 1033.
- from coal, tars, mineral oils, etc., (P.), B., 712.
- by dehydrogenation, (P.), B., 295.
- from phenols, (P.), B., 183.
- Hydrocarbons**, classification of, B., 837.
- recovery of, (P.), B., 11.
- from gases and regeneration of wash oil, (P.), B., 662.
- recovery of vapours of, (P.), B., 663.
- treatment of, (P.), B., 181, 215, 294, 295, 296, 486, 893.
- with water, (P.), B., 216.
- electrical treatment of, (P.), B., 813.
- heat treatment of, (P.), B., 795.
- apparatus for, (P.), B., 1126.
- heat treatment and vaporisation of, (P.), B., 616.
- purification of, (P.), B., 583, 838.
- refining of, B., 484; (P.), B., 11, 260, 344, 345, 394, 616, 1083.
- apparatus for, (P.), B., 663, 893.
- separation of, (P.), B., 12.
- decolorisation and desulphurisation of, (P.), B., 295.
- degumming of, (P.), B., 11.
- standard for gum inhibitors for, B., 535.
- desulphurisation of, (P.), B., 215.
- removal of carbon disulphide from, (P.), B., 89.
- removal of phenols from, (P.), B., 214.
- blending of, (P.), B., 617.
- blowing of, (P.), B., 663.
- coking of, (P.), B., 259, 344, 393.
- conversion of, (P.), B., 217, 441, 482, 759, 892.
- cracking of, B., 391; (P.), B., 56, 217, 260, 344, 486, 662, 663, 793, 795*, 892, 1035.
- apparatus for, (P.), B., 663.
- by pressure heating, (P.), B., 616.
- hydrogenation-cracking of, B., 791.
- distillation of, (P.), B., 89, 662.
- apparatus for, (P.), B., 486, 757.
- distillation of mixtures of powdered coal and, (P.), B., 537.
- destructive distillation of, apparatus for, (P.), B., 1126.
- fractional distillation of, (P.), B., 217.
- sweetening of, (P.), B., 344.
- optical anisotropy and chain structure of, A., 148.
- dielectric constants of, B., 888.
- thermal properties of, under pressure, B., 791.
- condenser for, (P.), B., 1035.
- vapour pressure of, A., 157.
- viscosity of solutions of, B., 888.
- activated adsorption of, A., 28.
- relation of structure of, to miscibility with solvents, A., 694.
- critical solution temperatures of, in sulphur dioxide, A., 159.
- "tensimetry" of, B., 613.
- parachor of, with abnormal molecular strains, A., 570.
- equilibria of, A., 165.
- phase equilibria in systems of, A., 22, 290; B., 710, 886.
- catalysis in chemistry of, B., 292.
- decomposition of vapours of, on carbon filaments, A., 1085.
- theory of combustion of, A., 1081.
- complete combustion of, in presence of copper oxide, B., 341.
- pro-knocks in combustion of, A., 172.
- ignition temperatures of, B., 935.
- knock characteristics of, B., 897.
- anti-knock effect of lead tetraethyl in, B., 614.
- effect of temperature on explosion of mixtures of air and, A., 307.
- chlorination of, (P.), B., 13, 140.
- thermal decomposition of, A., 727; (P.), B., 892, 1126.

- Hydrocarbons**, hydrogenation of, (P.), B., 216, 344.
 catalytic hydrogenation of, A., 589.
 destructive hydrogenation of, (P.), B., 217.
 oxidation of, (P.), B., 839, 1130.
 production of emulsifiable product by, (P.), B., 345.
 partial oxidation of, (P.), B., 983.
 fractionation of partial oxidation products of, (P.), B., 13.
 oxidation products from, (P.), B., 1034.
 oxidation and self-inflammation of, A., 708, 937.
 catalysis of oxidation of, by ozone, A., 1466.
 pyrogenetic condensation of, A., 1081.
 pyrolysis of, B., 391; (P.), B., 486, 1034.
 apparatus for, (P.), B., 1034.
 effecting reaction of, with steam, (P.), B., 90.
 fluorine derivatives, production of, (P.), B., 664.
 halofluoro-derivatives, manufacture of, (P.), B., 839.
 halogenated derivatives, production of, (P.), B., 939.
 diiodo-derivatives, action of light on, A., 48.
 mixtures of alcohol and, for motor fuels, (P.), B., 937.
 production of carbon black from, (P.), B., 9.
 catalytic production of gases rich in hydrogen from, (P.), B., 10.
 manufacture of resins from, (P.), B., 112.
 synthetic resins from, B., 735.
 production of size for paper from, (P.), B., 394.
 toxicity of, to fish, B., 1072.
 physiological effects of, A., 394.
 production of cancer by, A., 774.
 hæmolytic action of, A., 1002.
 identification of, by specific refractive dispersion, A., 61.
 determination of, in alcohol containing acetone, B., 12.
 determination in, of mercaptans, B., 484.
- Hydrocarbons**, acetylenic, oxidation of, with permanganate, A., 604.
 alicyclic, formation of, from free radicals, A., 1229.
 aliphatic, viscosity of solutions of, A., 1318.
 determination of unsaturation of, by bromide-bromate titration, A., 324.
 chlorinated, stabilisation of, (P.), B., 715.
 allene, isomerisation of, by silicates, A., 62.
 aromatic, production of, from benzene, B., 710.
 from phenols, B., 347.
 and their derivatives, manufacture of, (P.), B., 1133.
 band spectra of, A., 280.
 ultra-violet absorption of, A., 1299.
 dealkylation of, A., 967.
 meta-alkylation of, by Friedel-Crafts reaction, A., 612.
 chlorination of, (P.), B., 182.
 condensation of, with alcohols, A., 967.
 with propylene, A., 1358.
 colour changes in cyclisation of, A., 621.
 hydrogenation of, on molybdenum disulphide, A., 940.
 complex formation of, with polynitro-compounds, A., 828.
- Hydrocarbons**, aromatic, production of *cyclohexyl* derivatives of, (P.), B., 716.
 carcinogenic action of, A., 1400.
 low-boiling, manufacture of, from coal-tar fractions, (P.), B., 793.
 polycyclic, A., 1359.
 identification of, A., 859.
 benzenoid, preparation of, A., 203.
 synthesis of, A., 852.
 production of, from methane, B., 261.
 higher, syntheses of, A., 741.
 carcinogenic, A., 1268.
 and their relationship to sterols, A., 1400.
 cholic acids of, A., 1366.
 synthetic, A., 1526.
 chlorinated, stabilisers for, B., 137.
 use of, as transformer oils, B., 661.
 coal-tar, poisoning by, B., 752.
 coloured, of rubene type, A., 612, 616, 862.
 cracked, gum inhibitor for, (P.), B., 343.
 cyclic, molecular transpositions in, A., 1240.
 polycyclic, absorption spectra of, A., 680.
 aromatic, separation of, by chromatographic adsorption, A., 204.
 ethylenic, infra-red and Raman spectra of, A., 1190.
 fluorene, with labile hydrogen atom, reaction of, with alcoholic potassium hydroxide, A., 74.
 gaseous, manufacture of, (P.), B., 661.
 treatment of, (P.), B., 486.
 thermal treatment of, B., 934.
 purification of, for hydrogen production, (P.), B., 440.
 removal of acetylene from, (P.), B., 1127.
 processing of, (P.), B., 214.
 action of silent electric discharge on, B., 178.
 thermal reactions of, A., 1206; B., 979.
 conversion of, (P.), B., 794.
 into liquids, (P.), B., 295.
 absorption of gasoline from, B., 392.
 chlorination of, (P.), B., 92.
 partial oxidation of, (P.), B., 347.
 production of hydrogen from, B., 292.
 production of mixtures of hydrogen and nitrogen from, (P.), B., 215, 439.
 recovery of olefines from, (P.), B., 617.
 cracked, catalytic purification of, (P.), B., 215.
 analysis of, B., 54, 392.
 halogenated, hydrolysis of, (P.), B., 396.
 for dielectrics, (P.), B., 773.
 heavy, treatment of, (P.), B., 135.
 cracking of, (P.), B., 217.
 high-boiling, production of, (P.), B., 1083.
 treatment of, (P.), B., 217.
 heat treatment of, (P.), B., 217.
 of high mol. wt., manufacture of, from isobutylene, (P.), B., 182.
 light, stabilisation of, (P.), B., 11.
 cracking and polymerisation of, B., 980.
 liquid, synthesis of, from methane and carbon monoxide, B., 390.
 from natural gas, B., 292.
 from water-gas, B., 132.
 production of, (P.), B., 344, 394, 441, 983, 1126.
 from acetylene, B., 394.
 from solid carbonaceous materials, (P.), B., 712, 983.
 from gaseous hydrocarbons, (P.), B., 343.
- Hydrocarbons**, liquid, recovery of, from gaseous hydrocarbons, (P.), B., 11.
 treatment of, (P.), B., 793.
 heat treatment of, (P.), B., 90.
 refining of, (P.), B., 215, 345, 937.
 specific heat of, A., 289.
 polymerisation of, in silent electric discharge, B., 293.
 stabilisation of, (P.), B., 602, 794, 838.
 manufacture of acetylene from, B., 1052.
 low-boiling, production of, (P.), B., 216, 616, 617.
 from high-boiling hydrocarbons, (P.), B., 486.
 from higher-boiling oils, (P.), B., 11, 55, 344.
 from mixed oils, (P.), B., 89.
 refining of, by condensation, B., 535.
 decomposition of, B., 292.
 methane, effect of, on spectra of caesium and potassium, A., 1438.
 mixed, separation of, (P.), B., 1034.
 fractionation of, (P.), B., 346.
 production of gasoline by polymerisation of, B., 980.
 naphthenic, reaction of, with olefines, A., 1357.
 polynuclear, condensed, synthesis of, A., 481.
 olefinic, heats of hydrogenation of, A., 825.
 catalysis in addition of hydrogen bromide to, A., 62.
 liquid, inhibition of deterioration in, (P.), B., 394.
 paraffin, synthesis of, A., 352.
 production of, (P.), B., 295.
 influence of catalysts on thermal decomposition of, B., 341.
 monochlorides from chlorination of, B., 1084.
 nitration of, (P.), B., 618.
 gaseous, high-temperature pyrolysis of, B., 1035.
 pyrolysis and polymerisation of, B., 979.
 higher, synthesis of, from water-gas, B., 484.
 determination of, in coke-oven gas, B., 789.
 paraffin and petroleum, separation of, from oils, with ethylene glycol acetate, B., 836.
 cyclopentane, in benzene, B., 836.
 petroleum, separation of, with silica gel, B., 886.
 continuous rectification of, (P.), B., 89.
 conversion of, (P.), B., 486.
 neutral oxidation products of, B., 132.
 paint and varnish remover from, (P.), B., 960.
 resins from, (P.), B., 1056.
 production of artificial resins from, B., 319.
 phenanthrene, synthesis of, A., 975.
 polymerised, determination of mol. wt. of, B., 536.
 saturated, pyrolytic decomposition and hydrogenation of, B., 836.
 reaction of, with acetyl chloride, A., 1221.
 straight-chain and cyclic, volume of CH_2 in, A., 957.
 synthetic, composition of mixtures of, by specific refraction, A., 1479.
 solid, separation of, (P.), B., 538.
 apparatus for carbonisation and distillation of, (P.), B., 1082.

Hydrocarbons, solid, refraction and dispersion of, B., 1125.
viscosity of, B., 289.
substituted, infra-red absorption spectra of, A., 1444.
of terpene-aromatic series, A., 754.
unsaturated, oxidation of, with peracetic acid, A., 1103.
antioxidant of, B., 12.
polymerisation of, (P.), B., 297.
polymerisation products from, (P.), B., 892.
physical constants of, A., 469.
reaction of, with Grignard reagents, A., 1115.
with peracetic acid in acetic acid solution, A., 828.
determination of iodine values of, A., 728.
Hydrocellulose, and its derivatives, ultra-violet absorption spectra of, A., 913.
Hydrochasmanthic acid, and its methyl ester and methyl ether, A., 864.
Hydrochloric acid. See under Chlorine.
Hydrochloroapocamphenecarboxylic acid, A., 618.
Hydrochloroteresantalic acid, Müller's lactone from, A., 618.
epiHydrocinchonidine, and its salts, A., 765.
Hydrocinchonine, rearrangement of, by esterification, A., 765.
p-toluenesulphonyl derivative, A., 765.
heteroHydrocinchonine, A., 765.
epiHydrocinchonine, and its salts, A., 765.
stereochemical configuration of, A., 99.
Hydrocinchotoxine, stereochemical configuration of, A., 99.
Hydrocinchotoxine, *N*-nitroso-, and its hydrochloride, A., 765.
Hydro-V-columbin, A., 864.
Hydrocornicularic acid, and its methyl ester, and their semicarbazones, A., 1238.
Hydrocotarnine, 5-bromo-, and its hydrobromide, A., 1513.
Hydrocupreine aminoalkyl ethers, A., 874.
esters, iodobismuthates of, A., 874.
Hydrocyanic acid. See under Cyanogen.
Hydroferrocyanic acid, fourth ionisation constant of, A., 1460.
Hydrofluoric acid. See under Fluorine.
Hydrofuran ring, stability of, A., 866.
Hydrogen, atomic mass of, A., 677.
at. wt. of, A., 590.
masses of helium and, A., 5.
atoms, and non-Euclidian geometry, A., 1187.
van der Waals interaction of, A., 804.
collisions and recombination of, to molecules, A., 150.
recombination of, to molecules, A., 283, 827.
in presence of hydrogen chloride, A., 944.
perturbation of, by free electrons, A., 144.
adsorbed, hydrogenation by, A., 830.
excited, mean lives of, A., 274.
absorption of electric waves by, A., 1304.
positively activated, A., 494.
molecules, structure of, A., 423.
two-quantum states of, A., 423.
polarisability of, A., 560, 801, 1298.
heat of dissociation of, A., 135, 1291.
isotopes, A., 149, 1187.
ratio of, A., 156, 691.
fractionation of, in commercial electrolyser, A., 175.
laboratory electrolytic fractionation of, A., 589.

Hydrogen isotopes, spin of, A., 1.
binding energy of, A., 911.
triatomic ions in mixtures of, A., 557.
overvoltage of, A., 450.
vapour pressure of, A., 925, 1456.
electrolytic separation of, A., 1210, 1329.
See also Deuterium and Tritium.
isotope H^3 of, A., 1448.
scattering of slow neutrons by, A., 1296.
spin-isomerisation of, on dia- and paramagnetic surfaces, A., 1085.
collisions of α -particles in, A., 1295.
in the upper atmosphere, A., 1343.
in stellar spectra, A., 800.
Stark effect of, A., 908.
continuous absorption of, in stars, A., 1046.
emission of, from heated nickel, A., 1313.
manufacture of, B., 355; (P.), B., 227, 403, 452, 803, 900.
electrolytic apparatus for, (P.), B., 910.
from aluminium, sodium carbonate, and quicklime, B., 355.
from ammonia for hardening oils, B., 269.
from hydrocarbons, (P.), B., 10.
from gaseous hydrocarbons, B., 292.
from petroleum oils, (P.), B., 261.
catalysts for, from steam and carbon monoxide, (P.), B., 226.
treatment of, (P.), B., 187.
regeneration of spent ammoniacal cuprous solutions from, (P.), B., 440.
purification of hydrocarbons for, (P.), B., 440.
and mixtures of nitrogen from hydrocarbons, (P.), B., 215.
from natural gas, (P.), B., 439.
purification of, (P.), B., 590.
for bright annealing of metals, (P.), B., 629.
for destructive hydrogenation, (P.), B., 837.
and mixtures of nitrogen with copper-ammonia solutions, (P.), B., 803.
purification and liquefaction of, A., 1212.
spectrum of, A., 135, 271, 675.
excitation of, A., 1045.
Balmer lines in, A., 135, 555, 907.
Lyman lines in, A., 1.
absorption spectrum of, A., 1291.
band spectrum of, A., 1, 1437.
electrodeless spectrum of, A., 799.
Fulcher bands in molecular spectrum of, A., 555.
Stark effect in molecular spectrum of, A., 555, 675, 1291.
energy levels of secondary spectrum of, A., 1183.
Rydberg constant for, A., 1437.
sparking potential of, at high frequencies, A., 1438.
initiation of high frequency discharge in, A., 1184.
theory of overpotential of, A., 171.
overvoltage of. See under Overvoltage.
ionisation of, over metals, A., 1068.
in relation to molecular orientation, A., 912.
at platinum electrodes, A., 829.
ions in, A., 5.
electric polarisation of, adsorbed on metal surfaces, A., 556.
electrolytic introduction of, through glass, A., 705.
dielectric constant of, A., 1192.
at high pressures, A., 808.
thermodynamic properties of, A., 925.

Hydrogen, effect of temperature on thermal conductivity and accommodation coefficient of, A., 691.
heat capacity of, at high pressures and temperatures, A., 437.
breakdown of Coulomb law for, A., 144.
liquefaction of, by expansion, A., 1096.
liquid, demonstration experiments with, A., 189.
solid, ortho-para transformation in, A., 586.
differences in vapour pressure and m.p. of deuterium and, A., 189.
viscosity of binary mixtures of helium, neon, and, A., 438.
adsorption of, A., 1315.
by carbon, A., 696, 940.
and deuterium, by chromic oxide, A., 27.
by copper poisoned with carbon monoxide, A., 1078.
by iron, A., 578.
by iron catalysts, A., 1315.
by molybdenum and zinc oxides, A., 27.
by nickel, A., 27.
by reduced nickel, A., 293.
by palladium, A., 834, 1068, 1313.
on tungsten, A., 293, 1315.
dissociation pressures in system palladium and, A., 1322.
adsorbed in palladium, production of protons from, A., 677.
adsorbed in solids, exchange of deuterium with, A., 710.
diffusion of, through aluminium, A., 692.
occlusion and evolution of, by palladium, A., 159.
diffusion of, through metals, A., 25.
in palladium, A., 692.
and deuterium in palladium, A., 1200.
electrodiffusion of, through palladium, A., 1068.
permeability to, of films on cotton fabrics, B., 303.
of palladium, A., 928, 1315.
of refractory materials, B., 674.
solubility of, in molten aluminium, A., 1315.
in liquid ammonia, A., 25.
mixtures of nitrogen and, in water, A., 1200.
equilibrium of, with ethane and ethylene, A., 934.
function of, in intermolecular forces, A., 1307.
rotational dispersion of sound in, A., 923.
catalysis of ortho-para transformation of, by paramagnetic gases, A., 1208.
catalytic effect of, on carbon monoxide flame, A., 454, 588, 710.
exchange reactions of, on metallic catalysts, A., 44.
catalysis of interchange of, by aluminium chloride, A., 454.
catalysis by enzymes of exchange of deuterium with, in water, A., 1084.
exchange of deuterium between ammonia and, A., 1460.
catalytic transformations of, on nickel, A., 710.
catalytic combustion of, A., 455.
cathodic combustion of, A., 310.
combustion of mixtures of, with oxygen, A., 1080.
ignition of mixtures of, with oxygen, A., 708, 937, 1327.
in glow discharge, A., 176, 590.
recombination of, with oxygen on metal wires in electric discharge, A., 1087.
explosion of, with oxygen, A., 172, 1080.

Hydrogen, explosion of, with nitrogen and oxygen, A., 1080.
 oxidation of, in glow discharges, A., 45.
 quantum mechanics of reactions with, A., 560.
 wave mechanics of reactions of deuterium and, A., 306.
 emission spectrum of flame of bromine in, and mechanism of the reaction, A., 1291.
 reaction of, with solid inorganic compounds in the electric discharge, A., 943.
 with carbon monoxide, catalysts for, (P.), B., 393.
 with micro-crystalline charcoal, A., 818.
 photochemical reaction of, with chlorine, A., 46.
 thermal reaction of, with chlorine, A., 39.
 effect of oxygen on action of, with ethylene, A., 939.
 combination of, and of deuterium, with ethylene, A., 938.
 reaction of, with nitrogen and oxygen, influence of light on, A., 457.
 with nitrous oxide, effect of oxygen on, A., 40.
 on platinum, A., 829.
 combination of, with oxygen in direct-current discharges, A., 176.
 catalysis of action of, with oxygen, A., 588.
 catalysis by palladium of reaction of, with oxygen, A., 43.
 kinetics of reaction of, with oxygen, A., 709.
 surface influence on rate of reaction of, with oxygen, A., 827.
 action of, with oxygen in presence of platinum, A., 1085.
 effect of lead tetraethyl on, A., 42.
 photochemical reaction of, with oxygen, A., 46, 831.
 photochemical reactions of deuterium and, with oxygen, A., 46.
 photochemical effect of nitrogen peroxide on combination of, with oxygen, A., 943.
 disappearance of, in presence of potassium and lithium ions, A., 4.
 kinetics of reaction of, with sulphur, A., 307, 586.
 linking of, with electropositive metals, A., 713.
 under pressure, replacement by, of metals from solutions of their salts, A., 824.
 corrosion of steel by, at high pressure and temperature, B., 635.
 synthesis of liquid fuels and lubricating oils from, B., 179.
 zinc pellets for generation of, in Gutzzeit test, A., 1215.
 active, A., 590, 810.
 electronic structure of, A., 810.
 atomic, action of, on oleic acid and paraffin oil, A., 730.
 recombination and reaction of, with oxygen and carbon monoxide, A., 39.
 heavy. See Deuterium.
 molecular, elastic scattering of electrons in, A., 557.
 nascent, detection of, with resazurin, A., 184.
 ortho-para, transformation of, on solid oxygen, A., 708.

Hydrogen, ortho-para, detection of free radicals in photo-dissociation by conversion of, A., 1468.
 para-, catalytic transformation of, A., 1329.
Hydrogen arsenides. See Arsenic hydrides.
 bromide. See Hydrobromic acid under Bromine.
 chloride. See Hydrochloric acid under Chlorine.
 cyanide. See Hydrocyanic acid under Cyanogen.
 deuteride. See Deuterium hydride.
 fluoride. See Hydrofluoric acid under Fluorine.
 halides. See Halogen hydrides.
 iodide. See Hydriodic acid under Iodine.
 peroxide, formation of, by electrolysis with glow-discharge anode, A., 46.
 and carbon dioxide, from mixtures of oxygen, hydrogen, and carbon monoxide, A., 310.
 electrolytic preparation of, A., 1330.
 from oxygen, A., 942.
 production of, (P.), B., 148, 992.
 Raman spectrum and constitution of, A., 806.
 stability of mixtures of ethyl alcohol and, B., 205.
 production of dilute solutions of, by electrolysis, B., 671.
 production of concentrated solutions of, B., 849.
 purification of aqueous solutions of, (P.), B., 1092.
 stability of solutions of, B., 628.
 stabilisation of solutions of, (P.), B., 227, 673.
 stabilisation of aqueous solutions of, (P.), B., 948.
 stabilisers for solutions of, B., 543.
 aqueous, solubility of strong electrolytes in, A., 1314.
 solution of titanous hydroxide in, A., 1073.
 X-ray photolysis of, A., 1211.
 decomposition of solutions of, by X-rays, A., 943.
 decomposition of, action of arsenic acid and arsenates on, A., 939.
 by platinum, influence of solvent on, A., 941.
 by active sugar charcoal, effect of salts and gelatin on, A., 830.
 catalysis of, in different solvents, A., 455.
 effect of ultra-violet light on catalysts for, A., 47.
 catalytic decomposition of, by *Chlorella pyrenoidosa*, A., 263.
 by ferrous sulphate and sodium tungstate, A., 454.
 by iron salts, A., 174.
 by iodine-iodide couple, A., 42.
 in presence of mixtures of manganese and copper salts, A., 1466.
 on metals, A., 1467.
 by platinum, A., 1068, 1209.
 on platinum-black, A., 589.
 influence of sorbed gas on activity of catalysts in, A., 1209.
 photochemical decomposition of, A., 1087.
 actinometric measurement of, A., 1212.
 thermal decomposition of, in presence of glass wool and copper sulphate, A., 455.
 "salting-in" of, by electrolytes, A., 1457.

Hydrogen peroxide, oxidation and reduction with, A., 706.
 oxidation of manganous sulphate by, in alkaline solution, A., 181.
 oxidation of rubber by, B., 512.
 reduction of, by iodides, A., 41.
 reaction of, with cerous hydroxide, A., 594.
 with chloramine-T, kinetics of, A., 1207.
 on electrolysis of nickel nitrate solutions, A., 45.
 on nitrous acid, A., 1213.
 on olefines, A., 957.
 with pyrogallol, catalysis by iron of, A., 940.
 aluminium vessels for bleaching with, B., 301.
 disinfection of seeds with, B., 245.
 combination of, with haemoglobin, A., 372.
 detection of, A., 52.
 determination of silica in solutions of, B., 1043.
 selenide, preparation of, from selenium and hydrocarbons, A., 313.
 refractive index and molecular refractivity of, A., 148.
 sulphide, A., 438.
 production of, from sulphur compounds, (P.), B., 100.
 and carbon disulphide, (P.), B., 948.
 apparatus for generation of, A., 467.
 recovery of, from air and flue gases, (P.), B., 992.
 from sulphide ores, (P.), B., 495.
 band spectrum of, A., 280.
 infra-red rotation vibration spectrum of, A., 10.
 formation of negative ions in, A., 140.
 heats of formation and solution of, A., 36.
 liquid, dielectric constant and specific conductance of, A., 1304.
 density of, A., 290.
 refining of mineral oils with, B., 581.
 dissociation of, A., 569.
 regeneration of alkaline liquors used for absorption of, (P.), B., 355.
 action of, on chromates, A., 1470.
 with ethylene oxide, A., 606.
 with sulphurous acid in aqueous and alkaline solutions, A., 51.
 corrosion of iron by acids in presence of, B., 1048.
 discoloration of lead paints by, B., 160.
 corrosion of steel by, at high pressure and temperature, B., 635.
 removal of, from gases, (P.), B., 88, 214, 793, 837, 983.
 with activated charcoal, B., 708.
 poisoning by. See under Poisoning.
 photo-electric apparatus for detection of, (P.), B., 544.
 determination of, A., 948.
 apparatus for, B., 947.
 in air of viscose silk factories, B., 1087.
 in gas mixtures, A., 948.
 in mixed gases, gravimetrically, B., 628.
 in lignite-distillation gases, B., 390.
 in sewer gases, B., 656.
Hydrogen detection and determination :—
 detection of carbon, mercury, and, in organic compounds, A., 876.
 determination of, with silver permanganate, A., 717.
 microchemically, by Pregl's method, A., 369.

- Hydrogen detection and determination:**—
determination of, semi-microchemically,
by electric furnace, with automatic
temperature regulation, A., 101.
in helium, spectrochemically, A., 1215.
in organic compounds, microchemically,
A., 1140.
by semi-micro-method, A., 638.
- Hydrogen ions,** symbol for concentration of,
A., 189.
relation of concentration of, to photo-
graphic sensitivity, A., 712.
recombination of, A., 587.
effect of sodium sulphite on cathodic
discharge of, A., 831.
influence of plants on concentration of,
in media, A., 132.
diatomic, polarisability and related pro-
perties of, A., 1298.
intracellular, determination of, by vital
staining, A., 1552.
slow, probability of collisions for, in
argon, A., 558.
direct reading meter for, A., 839.
determination of, pointer instrument for,
A., 58.
apparatus for, (P.), B., 1101.
colorimeter tube for, A., 316, 1340.
electrodes for, and of the oxido-reduc-
tion potential, A., 1552.
with antimony electrodes, A., 1091,
1476.
glass electrode for, A., 1091, 1341.
Wiegner effect and errors in, B., 681.
by calculation, A., 839.
colorimetrically, A., 947.
indicators for, A., 947.
with the Pulfrich photometer, A.,
182.
at high temperatures, A., 717.
by dilution method, with two-colour
indicators, A., 1336.
with indicator papers, A., 594.
with the step-photometer, A., 1043.
when continuously changing, A., 189.
in biological fluids, A., 134.
in blood, A., 1143.
in coloured and viscous media, indi-
cators for, A., 594.
in solid culture media, with antimony
and quinhydrone electrodes, A., 1043.
in tissues, A., 270.
- Hydrogenation,** B., 707.
micro-apparatus for, A., 1476.
alloy steel for apparatus for, (P.), B., 155,
556.
catalysts for. See Catalysts, hydrogen-
ation.
high-pressure plant for, B., 178.
controlling temperature in, (P.), B., 90.
under pressure, B., 790.
selectivity of, B., 732.
analysis by, A., 1516.
of aromatic compounds, B., 296.
of oxygen-containing compounds, B.,
54.
biochemical, A., 123, 1367.
catalytic. See Catalytic hydrogenation.
destructive, purification of hydrogen for,
(P.), B., 837.
high-pressure, of aromatic compounds,
B., 261.
high-temperature, (P.), B., 55.
micro-, A., 862.
- Hydrogenator,** A., 1099.
Hydrogossypol, and its derivatives, A., 984.
"Hydrol," disaccharides in, A., 964.
Hydrol blue, Michler's, vinylene homo-
logues of, A., 209.
Hydrolysis, vapour-phase, A., 172.
- Hydrometers,** (P.), B., 482.
Hydromuconic acid, A., 196.
Hydrophenanthrene derivatives, synthesis
of, A., 1495.
Hydrophthalides, A., 1246.
Hydropyran compounds, A., 220, 626.
1-Hydroselenoanthraquinone, 2-amino-,
production of, (P.), B., 297.
Hydrosorbic acid, composition of, A., 195.
p-iodophenacyl ester, A., 844.
Hydrosulphides, thermochemistry and
physical properties of, A., 918.
organic, reactions of, with bismuth salts,
A., 1515.
Hydrovitamin-A, A., 543.
- Hydroxides.** See Alkali hydroxides and
Metallic hydroxides.
Hydroxy-acids, formation of, by atmos-
pheric oxidation of paraffin, A., 196.
esterification of, A., 1223.
aliphatic, production of esters of, (P.),
B., 92.
carboxylic, tertiary, resolution of, A., 489.
 α -Hydroxy-acids, anodic reactions in electro-
lysis of, A., 960.
isopropylidene compounds of, and their
Raman spectra, A., 960.
carboxylic, formation of chloralides of,
A., 328.
 α -Hydroxy-aldehydes, preparation of, A.,
608.
and their acetals, ethers of, A., 846.
preparation of ethers of, from glycerol
 α -ethers, A., 1362.
Hydroxyalkyl-amines, production of, (P.),
B., 1130.
Hydroxyazo-compounds. See Azo-com-
pounds, hydroxy-.
- Hydroxy-compounds,** infra-red absorption
spectra of, A., 1189.
aliphatic and aromatic, action of chlorine
dioxide on, A., 621.
organic, influence of, on corrosion of
iron, B., 1048.
*poly*Hydroxy-compounds, oxidising action
of lead tetra-acetate and periodic acid on,
A., 454.
Hydroxyfluoboric acid. See under Boron.
Hydroxy-ketones, isomerisation of, A., 753.
aromatic, production of, (P.), B., 348.
 α -Hydroxy-ketones, determination of, by
means of Nessler's reagent, A., 370.
 $\alpha\delta$ -Hydroxy-ketones, synthesis of, A., 351.
Hydroxyl groups, hydrogen-isotope effect
in spectrum of, A., 1299.
band spectrum of, A., 679.
infra-red band spectrum of, A., 1052.
electron affinity of, A., 1058.
action of calcium hypochlorite on organic
compounds containing, A., 958.
elimination of, from glycols, A., 1504.
free, lifetime of, A., 811.
phenolic, acetylation of, A., 1122.
determination of, A., 369.
in fatty acids and higher fatty alcohols,
B., 1054.
- Hydroxylamine,** action of, on naphthalene
derivatives, A., 744.
hydrochloride, action of, on oximino-
triphenylpyrrole, A., 763.
use of, in determination of camphor, A.,
1516.
Hydroxy-polyketones, A., 982.
***o*-Hydroxy-sulphones,** rearrangement of,
A., 1490.
Hydroxysulphonic acids, aromatic, action
of, on amino-acids, A., 1486.
on hippuric acid, A., 970.
- Hygiene,** industrial, in chemical works,
B., 527.
- Hygrometers,** uses of, B., 433.
Hygroscopic materials, drying of, (P.), B.,
83.
carbon-coated, humidity and electrical
resistance of, B., 96.
Hygroscopicity, A., 1316.
Hyphomycetes, soluble enzymes secreted
by, A., 124.
Hyoseyamine, determination of, mercuri-
metrically, A., 999.
***l*-Hyoseyamine,** action of, on the human eye,
B., 700.
***d*- and *l*-Hyoseyamines,** action of, and of
atropine, on children, A., 119.
Hypercalcaemia, production of, with irradi-
ated ergosterol, A., 129.
effect of, on cerebral cortex, A., 539.
Hypercholesterolaemia, action of insulin
on, A., 901.
endogenous and exogenous, effect of
hepatic stimulation on, A., 244.
Hyperemesis gravidarum, porphyrin excre-
tion in, A., 1269.
Hyperglycaemia after excitation or section
of depressor nerves, A., 641.
due to stimulus of hypothalamus, A.,
658.
produced by salts, A., 781.
caused by excitation of vagus divided
at neck, A., 770.
in various individuals, A., 641.
adrenaline, A., 1283.
influence of metallic salts on, in
rabbits, A., 1021.
alimentary, mechanism of, A., 1016.
diuretic, effect of callicrein on, A., 538.
morphine, mechanism of, A., 1410.
piqûre, processes in, A., 539.
Hyperlipaemia, alimentary, A., 653.
Hyperparathyroidism, metabolic criteria
of, A., 1401.
calcium metabolism in, A., 384.
Hyperproteinemia, idiopathic, A., 887.
Hyperpyrexia, effect of, on complement-
fixing antibodies, A., 1395.
Hypersthenie, Aberdeenshire, A., 1344.
Hypertension, florid and pallid, choline in
blood in, A., 887.
pallid, pressor substances in blood in,
A., 887.
Hyperthermia, exogenous, heat exchange
in, A., 1269.
Hyperthyroidism, basal metabolism and
specific dynamic action in, A., 384.
diuresis in, A., 1032.
fat tolerance in, A., 1009.
and diabetes, A., 650.
experimental, glyco-genetic function of
liver in, A., 384.
Hyperthyrosis, iodine metabolism in, A.,
1009.
Hypervitaminosis-A, A., 1174.
effect of yeast on, A., 543.
- Hyphomycetes,*** action of cinnamic acid in
chloroform, mercuric chloride and iodine
on, A., 788.
Hypnotics, (P.), B., 287.
effect of, on glucose tolerance, A., 655.
barbiturate, sulphur-containing, A., 1507.
Hypobromites. See under Bromine.
Hypochloraemia, gastric juice in, A., 1267.
Hypochlorites. See under Chlorine.
Hypoglycaemia from action of yeast extracts,
A., 243.
fasting, effect of fat and protein on,
in infants, A., 523.
insulin, A., 1422.
before and after nephrectomy, A., 1031.
Hypohalites, effect of p_H on decomposition
of, A., 42.

Hypolipæmia, after ingestion of butter, A., 523.
Hypophosphoric acid. See under Phosphorus.
Hypophysin, effect of, on gastric acidity, A., 667.
Hypoproteinæmia on diet deficient in protein, A., 1269.
Hyposalazic acid, methyl ester, methyl ether. See **Hypostictic acid**, methyl ester.
Hypostictolide, A., 214.
Hypostictic acid, methyl ester, A., 213.
Hyposulphites. See under Sulphur.
Hypothalamus, hyperglycæmia due to stimulus of, A., 658.
Hypothyroidism, blood-cholesterol and urinary creatinine in, A., 650.
 creatine metabolism in, A., 108.
 action of iodine in, A., 889.
 human, carbohydrate metabolism in, A., 888.
Hypotrichosis, hereditary, of rats, effect of cysteine on, A., 1402.
Hypoxanthine, thermal data for, A., 1324.
 flavianate, A., 639.
Hyptis mutabilis, volatile oil of, A., 797.

I.

I-mao-tsao. See *Leonurus sibiricus*.
Ice, X-ray diffraction patterns of, A., 686.
 manufacture of, prevention of corrosion in plant for, B., 1.
 magnetic susceptibility of, A., 1197.
 lowering of eutectic point of, with potassium sulphate, A., 824.
 linear velocity of crystallisation of, A., 829.
 formation of crystals of, A., 686.
 production of large crystals of, A., 48.
 containing deuterium, crystal structure of, A., 151.
 natural, concentration of deuterium oxide in, A., 953.
Ice cream, manufacture of, B., 1161.
 treatment of milk for, (P.), B., 123.
 controlling physical properties of mixes for, B., 475.
 separation of whey in stabilised mixes for, B., 874.
 microscopy of, B., 378.
 with high solids, B., 1161.
 vanilla extract for, B., 1161.
 determination in, of fat, by Babcock method, B., 1161.
Iceland moss. See under Moss.
IcERIA purchasi, mineral and nitrogenous constituents of, A., 1398.
Ichthyol, manufacture of, from Polish materials, B., 606.
 from Volga shale, B., 1028.
Icterus, bilirubin in serum in, A., 776.
 phosphovanillin reaction of bile salts in tissues in, A., 776.
 catarrhal, bilirubin in, A., 650.
d-**Idomethylonolactone**, A., 1433.
Ignition and oxidation at hot surfaces, A., 1327.
 of mixed gases by the corona discharge, A., 708.
 of solids, determination of temperatures of, B., 707.
 spark, thermal and electrical theories of, A., 40.
Ilex aquifolium, osmotic pressure in, A., 1288.
Imamicol, influence of, on tissue cultures, A., 1413.

Imbibition, propagation of, A., 581.
 thermodynamics of, A., 581.
Imides, action of diazomethane on, A., 1357.
Imido-ethers, electrolytic reduction of, A., 742.
Imidochlorides, A., 1241.
Imines, cyclic, preparation of, from thioisoximes, A., 868.
 heterocyclic, production of diazoimino-compounds from, (P.), B., 1134.
N-substituted, of aliphatic ketones, preparation of, A., 336.
Imino-compounds, infra-red absorption spectra of, A., 1189.
 action of sodium and potassium on, A., 335.
Imino-groups, band spectra of, A., 561, 679, 912.
Iminodicarboxylcholine dichloride, and its auric chloride compound, A., 1228.
Iminodicarboxylic acid, di- β -chloroethyl ester, A., 1228.
Immunisation, preparation for, (P.), B., 333.
Immunological reactions, viscosity in, A., 1395.
Immunology and chemistry, A., 1519.
Impact strength, tester for, B., 481.
Impatiens balsamina, distribution of water, dry matter, and nitrogen during germination of, A., 419.
Imperatorin, synthesis of, A., 986.
Inanition, adrenaline in adrenals in, A., 1403.
Incinerators, (P.), B., 656.
Incretin, activity of, A., 788.
 effect of, on arterial and venous blood-sugar, A., 538.
 on glycogen in rabbit's liver, A., 1172.
 on glycosuria of depancreatised dogs, A., 410.
Incubators, thyron control for, A., 1217.
 for biological laboratories, A., 1283.
Indanedione. See **Diketohydrindene**.
Indanthrene, fusion of, B., 264.
Indazoles, A., 991.
Indene nucleus, formation of, A., 1115.
 compound of, with methyl tetranitrodiphenate, A., 828.
 use of, as cryoscopic solvent, A., 443.
Indene, 1-hydroxy-, derivatives of, A., 1233.
Indene series, autoxidation in, A., 1369.
Indene-3-carboxylic acid, ethyl ester, production of, (P.), B., 861.
Indican, determination of, in urine, colorimetrically, A., 648.
Indicators, A., 38.
 effect of proteins on, A., 38.
 alcohol error of, A., 585.
 salt error of, in acid-base titration, A., 594.
 salt effect of, in slightly buffered solutions, A., 1325.
 dinitroaniline azo-dyes as, A., 315.
 malachite-green as, A., 462.
 for acidimetry, A., 52.
 for argentometric analysis, A., 719.
 for bromometry, A., 718.
 for volumetric analysis, A., 182.
 adsorption, use of, in volumetric analysis, A., 53.
 fluorescence, β -methylumbelliferone as, A., 316.
 mixed, A., 462, 1336.
 oxidation-reduction, A., 1092.
 diphenylbenzidine as, A., 462.
 for dichromate titrations, A., 56.
 radioactive, A., 577, 595.
Indigo, storage of, in sealed tins, B., 514.

Indigo-carmin, use of, in micro-volumetric analysis, A., 1095.
Indigo dyes, manufacture of, (P.), B., 718.
 manufacture and reduction products of, (P.), B., 942.
 Persian, B., 444.
 vat, manufacture of, (P.), B., 1135.
Indigoid dyes. See under Dyes.
Indigosol-O, foulard and reserve dyeing with, B., 625.
Indigosol dyes, B., 302.
Indigotin, formation of, in detection of acetic acid and methyl ketones, A., 877.
 determination of, A., 769.
Indigotin, 6:6'-dibromo-, synthesis of, A., 359.
*iso***Indigotin**, and related compounds, A., 1134.
Indirubin, determination of, A., 769.
Indium, at. wt. and isotopes of, A., 802.
 isotopes of, A., 558.
 radioactivity of, induced by neutrons, A., 276.
 electroplating with, baths for, (P.), B., 1000.
 and its alloys with silver, crystal structure of, A., 285.
Indium alloys, with copper, A., 22; (P.), B., 908.
 with lithium, A., 1314.
 with mercury, for dentistry, (P.), B., 858.
 with silver, A., 576.
Indium bromide and iodide, optical dissociation of, A., 280.
 halides, emission and absorption spectra of, A., 144.
Indium organic compounds:—
 Indium salts of organic acids, A., 730.
Indium detection and separation:—
 detection of, by drop reaction, A., 318.
 separation of, from iron, A., 319.
Indole, formation of, by *Bacillus coli*, A., 663.
 derivatives, formation of, from *o*-aminated tolans and stilbenes, A., 1505.
 synthesis of sulphur derivatives of, A., 1379.
 in blood, and its elimination, A., 653.
 transformation of, into indoxyl in liver, A., 1015.
 detection of, with gold, A., 998.
 determination of, in blood, A., 1000.
Indole, 5:6-dihydroxy-, potassium disulphate, A., 235.
Indoles, A., 83, 619, 759, 1133, 1505.
 dimeric, constitution of, A., 225.
 polymeric, A., 502.
 substituted, preparation of, from phenylhydrazones, A., 1378.
Indole series, A., 635, 765, 1250.
 synthesis in, A., 499, 1378.
 optical activity in, A., 356.
Indoleacetic acids, A., 222.
Indole-3-acrylic acid, 1-nitroso-, and its dibromide, A., 1132.
Indole-3-aldehyde, and its homologues, synthesis of, A., 628.
Indole-3-*n*-propionic acid as growth hormone, A., 795.
Indoline derivatives, formation of, from *o*-aminated tolans or stilbenes, A., 1505.
 β -Indolylacetic acid as promoter of root growth, A., 1038.
 β -3-Indolylethyl bromide, A., 1379.
3- β -Indolylethylamine, and its derivatives, A., 1378.
 β -3-Indolylethyl dimethylamine, A., 1256.
Indolylethylhomophthalimide, and its derivatives, A., 1138.

- 3-Indolyl-5-(1-methylhydantoyl)methane**, A., 1015.
- Indones**, stereoisomerism of, A., 85.
- Indophenol**, from carbazole and *p*-nitrophenol, analysis of, B., 1084.
- Indophenol-oxidase**, effect of irradiation on, A., 248.
- Indoxyl**, compound of, with ninhydrin, A., 648.
origin and elimination of, in blood, A., 373, 374.
and its complex with thymol, determination of, A., 769.
- Indoxylæmia**, substances which increase, A., 1015.
- Indylo-salts**, complex, A., 1335.
- Infants**, nutritive value of egg powder-soya bean mixtures for, B., 698.
milk product for, (P.), B., 1065.
- Infarct**, pathological physiology of, A., 1269.
- Inflammation**, rôle of histamine in, A., 650.
- Influenza**, transmission of, by a filterable virus, A., 108.
vitamin prophylaxis against, A., 384.
- Infusions**, preparation of, by diaculation, B., 782.
- Infusoria**, resistance of, to ultra-violet light, A., 120.
effect of alkaloids on polarity of, A., 245.
- Injection**, liquid preparations for, (P.), B., 973.
preparation of sterile solutions for, B., 572.
sterilisation of solutions for, B., 252.
dyes for, B., 523.
isotonic colloidal sulphur solution for, (P.), B., 973.
hypodermic, anæsthetics for, (P.), B., 478*.
use of camphorsulphonic acid salts for, B., 653.
determination of alkaloids in solutions for, B., 1117.
- Ink**, colloid chemistry of, B., 1004.
examination of, in infra-red light, B., 774.
apparatus for testing fastness to light of, (P.), B., 533.
effect of, on deterioration of paper, B., 774.
removal of, from linen, etc., (P.), B., 186.
aniline, for offset printing, B., 366.
Chinese, cataphoresis of, in water containing deuterium oxide, A., 1075.
Chinese black, colloidal nature of, B., 860.
gravure, B., 815.
iron gallate, B., 913.
iron gallotannate, B., 959.
marking, production of, (P.), B., 110.
photogravure, manufacture of, (P.), B., 367.
printing, B., 684, 960; (P.), B., 110.
manufacture of, B., 734; (P.), B., 466.
driers for, B., 684.
mills for, B., 1055; (P.), B., 481.
use of gas black in, B., 734.
livering of, B., 417.
media for, B., 960.
use of petroleum jelly in, B., 366.
synthetic resins for, B., 815.
receptivity of paper for, B., 798.
removal of, from paper, (P.), B., 541, 897.
failure of, B., 960.
storage of, B., 684.
microscopy of, B., 1151.
bronze, manufacture of, (P.), B., 511.
newspaper, B., 684.
production of, (P.), B., 367.
- Inorganic compounds**, Smekal-Raman effect in, A., 428.
polymorphism of, A., 1449.
anomalous heat effects in, A., 448.
surface energy and b.p. of homologous series of, A., 21.
thermal dissociation equilibria of, A., 167.
double decomposition and oxidation of, under pressure, B., 543, 1141.
hydrolysis of, A., 181.
water in, A., 1347.
unstable, equilibria of, A., 446.
- Inosine**, boric acid reaction with, A., 1266.
derivatives, A., 1481.
- Inosine-5-phosphoric acid**, barium salt, A., 1482.
- Inosinic acid** of muscle, synthesis of, A., 1481.
- Inositol**, formation of, from hexoses, A., 1225.
preparation of, from inositolphosphoric acid, A., 210.
oxidation of, by rat tissue, A., 658.
biological oxidation of, A., 241.
determination of, A., 1390.
- Inositolphosphoric acid**, ferric salt, compounds of, with salts of hydroxyacids, A., 746.
compounds of, A., 746.
derivatives of, B., 173.
- Insanity**, maniacal-depressive, bromine in blood in, A., 1149.
- Insects**, sense of taste in, B., 823.
function of corpus allatum in, A., 1285.
carotenoids of integuments of, A., 105.
chemistry of, A., 646.
repellants for, (P.), B., 423.
esters as, B., 374.
fumigation of foods for protection against, B., 251.
protection of goods against, (P.), B., 98.
- Insecticides**, B., 246; (P.), B., 200, 256, 283, 327, 375, 648, 692, 743*, 869.
production of, (P.), B., 327, 348, 381, 920, 976, 1062, 1159.
combined fertilisers and, (P.), B., 869.
combined fungicides and, B., 822.
manufacture of, (P.), B., 473.
spray drying of, B., 167.
wetting agents for, B., 743.
wetting-out agents for, (P.), B., 743.
action of urea on colloidal suspensions of, B., 473.
ovicidal action of winter washes of, B., 869.
use of sulphated alcohols in, B., 968.
anabasine sulphate as, B., 1159.
chloronaphthalene as, B., 1013.
chloropicrin as, B., 374.
freezing of creosap emulsions for use as, B., 199.
p-dichlorobenzene as, B., 647.
Mysore fish poisons as, B., 118.
fluorine compounds as, B., 968.
halowax as, B., 969.
emulsification of mineral oils for, with soya-bean meal, B., 1158.
organic thiocyanogen compounds as, B., 38, 647.
petroleum distillate for, B., 327.
use of low-boiling petroleum distillate in, B., 778.
standardisation of petroleum and tar oils for, B., 822.
East African plants as, B., 167.
rotenone and similar substances as, B., 919.
tar distillate and tar-lubricating oil sprays for, B., 969.
- Insecticides**, removal of residues of, from fruits and vegetables, (P.), B., 748.
dosage-mortality data on, B., 823.
testing of, by modified Peet-Grady method, B., 743.
for edible plants, B., 74.
for fabrics, (P.), B., 848.
for fibre products, etc., (P.), B., 448.
for fumigation, B., 1071.
for wall plaster, (P.), B., 770.
arsenic, uses of, B., 118.
substitutes for, B., 968.
arsenic and lead, determination of, in foods, B., 875.
coal-tar kerosene, for seeds, B., 1012.
contact, (P.), B., 168.
comparison of ovicidal properties of, B., 969.
mixed fungicides and, B., 517.
fatty acids and their soaps as, B., 647.
testing of, B., 167.
cryolite, B., 822.
removal of residues of, B., 247.
derris, B., 247.
household, comparison of rotenone and, B., 1167.
lead arsenate, effect of, on citrus fruit, B., 423.
removal of residues of, from fruit, B., 247.
substitutes for, B., 74.
nicotine, spreader for, B., 969.
oil emulsion, oil deposits of, B., 247.
oil spray, B., 326.
oleaginous, production of, (P.), B., 656.
organic, B., 743.
powdered, manufacture of, (P.), B., 823, 832.
spray, incompatibility of molasses with sodium fluosilicate and lead arsenate in, B., 1159.
use of, in Lafayette, Indiana, B., 1014.
removal of residues of, B., 74.
for apple orchards, B., 118.
iron sulphate and lime-sulphur mixture as, B., 1111.
petroleum oil, penetration of, into protoplasm, B., 472.
winter, for orchards, B., 1159.
- Insulating materials**, manufacture of, (P.), B., 1074.
manufacture of base for, (P.), B., 1005.
use of coal tar products as, B., 1028.
use of triethanolamine in, B., 1151.
electrical, (P.), B., 275, 910, 1148.
production of, (P.), B., 415.
from regenerated cellulose, (P.), B., 491.
from shellac, B., 562.
from silk, (P.), B., 943.
binders for, (P.), B., 275.
bakelite materials as, B., 957.
fibre boards bonded with synthetic resins for, B., 466.
resins for, (P.), B., 368.
dissolving of rubber for, (P.), B., 916.
rubber compositions for, (P.), B., 644.
ageing of, B., 363.
liquid, (P.), B., 30, 773.
purification of, (P.), B., 67.
organic, diffusion of water through, B., 507.
rubber, (P.), B., 30, 776.
vitreous, manufacture of, (P.), B., 993.
heat, (P.), B., 2, 531, 806, 853, 882.
manufacture of, (P.), B., 257, 578, 806.
thermal conductivity of, B., 1073.
permeability of, to air, B., 852.
from asbestos, (P.), B., 896.
cellular, manufacture of, (P.), B., 386.

- Insulating materials**, heat and sound, (P.), B., 497, 903.
 manufacture of, (P.), B., 25, 150, 434.
 tiles for, (P.), B., 805.
 porous, (P.), B., 705.
 sound, (P.), B., 357, 806, 1144.
 porous, manufacture of, (P.), B., 1045.
- Insulating oils**, (P.), B., 1034.
 production of, from mineral oils and resins, (P.), B., 11.
 purification of, (P.), B., 218.
 composition for retarding sludge formation in, (P.), B., 1128.
 electrical, (P.), B., 760.
 used, purification of, (P.), B., 89.
- Insulating varnishes**, B., 684.
- Insulation of metal sheets**, (P.), B., 275.
 electrical, of steel sheets, (P.), B., 315.
 heat, B., 289; (P.), B., 754, 755.
 costing of, B., 81.
 with aluminium foil, B., 312.
 rubber, protective coverings for, (P.), B., 684.
- Insulators**, effect of field intensity on ionic lattices of, A., 147.
 conducting coatings on, (P.), B., 725.
 effect of oil immersion on insulating properties of, B., 731.
 bakelite, thermal breakdown of, B., 1148.
 electrical, (P.), B., 812.
 attachment of metal parts to, (P.), B., 30.
 of high thermal conductivity, B., 363.
 liquid, dielectric loss of, A., 915.
 porcelain, (P.), B., 1095.
 solid, dielectric loss of, A., 916.
 solid and liquid, electric breakdown on, B., 193.
 porous, heat flow in, B., 337.
- Insulin**, purification of, A., 666.
 crystal structure of, A., 687.
 anterior pituitary substance stimulating production of, A., 1423.
 absorption of, A., 127.
 effect of adrenaline, ephedrin, and pituitrin on, A., 901.
 absorption and fate of, after percutaneous application, A., 1543.
 effect of state of kidneys on activity of, A., 1031.
 hypoglycæmia from, A., 1031, 1422.
 before and after depancreatization, A., 666.
 peripheral action of, A., 901.
 secondary action of, in hypercholesterolemia, A., 901.
 inactivation of, A., 1543.
 action of, A., 1422.
 effect of liver damage on, A., 789.
 effect of oxytocin and vasopressin on, A., 543.
 relation of pituitary to, A., 901.
 on adrenectomized rabbits, A., 538.
 on alcoholæmia in men, A., 1285.
 on allantoin excretion in dogs, A., 538.
 on alkali reserve, A., 1269.
 on amino-acid metabolism, A., 127.
 on blood-lactic acid, A., 538.
 on blood-sugar, A., 641.
 in "heat-stroke," A., 538.
 in men, A., 901.
 on deposition of carbohydrate and fat in the organism, A., 538.
 on the mammalian diabetic heart, A., 127.
 on glucose and lactate usage of heart in diabetes, A., 1269.
 on lactic acid, protein, and sugar in lymph and blood, A., 1261.
 on liver-glycogen, A., 1422.
- Insulin**, action of, on muscle, A., 538.
 on phosphorus exchange in muscle, A., 1543.
 on parasympathetic action, A., 411.
 on fasting pigeons, A., 1543.
 on purine metabolism, A., 789.
 effect of injection of, on plasma-cholesterol, A., 411.
 effect of repeated injections of, on thyroid, A., 901.
 effect of adrenaline on secretion of, A., 1172.
 action of bacteria on, A., 901.
 action of benzylcarbonyl chloride on, A., 1422.
 action of red blood-corpuscles on, A., 538.
 action of phenylthiocarbimide on, A., 411.
 enzymic hydrolysis of, A., 250.
 administration of calcium in super-sensitivity to, A., 789.
 sulphur of, A., 789.
 vitamin-B as substitute for, A., 1286.
 time curve after, A., 789.
 pharmacology of, A., 1411.
 dangers of use of, A., 775.
 increased effectiveness of equal doses of, A., 1285.
 resistance of sarcomatous rats to, A., 1269.
 liver-lipins in depancreatized dogs maintained with, A., 411.
 amorphous and crystalline, electric potential of, A., 30.
 crystalline, A., 411, 788, 789, 901.
 effect of, on substances of the residual carbon group, A., 127.
 irradiated, stimulation of adrenal medulla by, A., 1422.
 vagotomized-free, effect of, on glycogen deposition in liver, A., 1031.
 assay of commercial preparations of, A., 666.
 determination of, in body-fluids and tissues, A., 411.
- Interfacial tension**, device for recording drop numbers in measurements of, A., 952.
- Interferometers**, equalisation of temperature of tubes of, A., 57.
 acoustic, A., 952.
 sonic, for study of absorption in liquids, A., 320.
- Interferometry**, A., 660.
- Intermediate**, treatment of diabetes with, A., 1401.
- Intestinal extracts**, depressor substance in, A., 780.
 phosphorylation of sugars by, A., 521.
- Intestinal juice**, composition of, A., 379.
 effect of diet on amylolytic power of, A., 1267.
 effect of anions on chloride and sodium in, A., 773.
 effect of loss of, on blood, A., 513.
- Intestines**, chemistry of, A., 112.
 absorption in, adaptation of, to composition of food, A., 522.
 effect of hormones on, A., 540.
 of glucose and water, A., 654.
 of sugars, A., 522.
 permeability of, *in vitro*, A., 1013.
 effect of p_H and hydroxyl-ion concentration on tonus of, A., 244.
 hormone controlling villi of, A., 410.
 humoral control of secretion in, A., 1147.
 storage of ascorbic acid in, A., 669.
 excretion of fats through mucosa of, A., 1152.
 passage of fluid and dissolved substances through mucosa of, A., 391.
- Intestines**, liberation of histamine-like substances in infarction of, A., 1532.
 production of phosphoric esters in, during resorption of sugars, glycerol, and fat, A., 1017.
 stasis of, on low mineral diets, A., 1528.
 excited, effect of papaverine derivatives on, A., 528.
 small, p_H of contents of, A., 513.
 effect of preoperative medication and anaesthesia on, A., 893.
 gaseous distension in obstruction of, A., 384.
 cat's, acetylcholine-like substance from perfusion liquid of, A., 244.
 dog's, action of dilauid and of morphine on, A., 528.
- Intramolecular transpositions**, A., 63, 64.
- Inulin**, constitution of, A., 1354.
 production of, (P.), B., 970.
 utilisation of, by rats, A., 112.
- Invertase**, production of, (P.), B., 41.
 ultrafiltration of, A., 659.
 absorption spectra of preparations of, A., 121.
 action of, A., 1278.
 effect of viscosity on, A., 534.
 water concentration required for, A., 1163.
 determination of activity of, A., 659.
 yeast, effect of proteins on activity of, A., 1415.
 determination of, A., 402.
- Invertebrates**, properties of fats of, B., 68.
 nitrogen catabolism in, A., 1015.
 marine, colloid osmotic pressure of nutrient liquids of, A., 1524.
- Invert-sugar**. See under Sugar.
- Iodimetry**, A., 717.
- Iodine molecules**, energy exchange between inert gases and, A., 1305.
 adsorbed, photochemical action of, A., 943.
 in cabbage, A., 553.
 in seaweeds, A., 553.
 in Japanese soils, A., 191; B., 1060.
 preparation of, A., 1090.
 manufacture of, purification of extracts for, B., 724.
 recovery of, from brine, (P.), B., 100, 187.
 from silver iodide, A., 591.
 effect of solvent on absorption spectra of solutions of, A., 1443.
 infra-red arc spectrum of, A., 423.
 feebly excited spectra of, A., 424.
 spark spectrum of, A., 272.
 second spark spectrum of, A., 800.
 ultra-violet fluorescence spectrum of, A., 800.
 quenching of fluorescence of, by benzene vapour, A., 1054.
 radioactivity of, induced by neutrons from heavy water, A., 276.
 Zeeman effect in, A., 271.
 Budde effect in, A., 279.
 dipole moment of, A., 283.
 electron affinity of, A., 273.
 influence of capillarity on m.p. of, A., 294.
 liquid, preparations of, B., 828.
 density of, A., 156.
 vapour, fluorescence and absorption spectrum of, A., 2.
 molecular spectrum of, A., 2.
 excitation of resonance spectrum of, A., 137.
 ultra-violet absorption of, A., 272.
 ultra-violet fluorescence spectrum of, A., 1046.

Iodine vapour, adsorption of, by active carbon and silica gel, A., 441.
 highly-attenuated flames of potassium vapour and, A., 708.
 rate of evaporation of, from aqueous solutions, A., 439.
 adsorption of, by charcoal, B., 802.
 by silica gel, A., 696.
 adsorption and recovery of, from active charcoal, A., 930.
 loss of, from its solutions with potassium iodide, A., 52.
 assay of solutions of, B., 606, 1163.
 heats of activation in reaction of, with acetone, A., 43.
 thermal equilibrium of, with ethylene and ethylene iodide, A., 1460.
 direct oxidation of, at high pressures, A., 461.
 oxidation by, of hydrazo-compounds, A., 41.
 action of, on cellulose, A., 1485.
 with oxalates, A., 1090.
 with oxalic acid in ethylene glycol, A., 715.
 with potassium thiocyanate, A., 828.
 with starch, A., 932, 1320.
 photochemical reaction of, with ethylene iodide in carbon tetrachloride solution, A., 832.
 with oxalates, A., 832.
 non-staining ointments of, B., 923.
 influence of, and of calcium on growing rats, A., 393.
 absorption of, by the skin, and its excretion, A., 115.
 intrapulmonic absorption of, A., 657.
 ingestion of, and its excretion in urine, A., 115.
 excretion of, in urine, A., 410.
 effect of thyroid extracts on, A., 258.
 reversal of thyroid activity by, A., 410.
 and thyroid hyperplasia, A., 1009.
 in blood, regulation of, by liver, A., 115.
 content of, in human blood, A., 231.
 in human colostrum and milk, A., 106.
 content of, in endocrine organs, A., 1396.
 in human pituitary, A., 511.
 in thyroid, A., 511.
 ionised, spectrum of, A., 424, 1046.
Iodine compounds, thyroxine-like, origin of, A., 410.
Iodine monochloride, A., 51.
 action of, on cellulose, A., 1485.
 trichloride, thermo-dynamic constants of, A., 447.
 pentafluoride, absorption spectrum of, A., 9.
 oxides, lower, A., 1334.
 sulphates, lower, A., 1334.
Hydriodic acid, physical properties of, and of deuterium iodide, A., 1064.
 infra-red spectrum and molecular constants of, A., 806.
 photo-oxidation of, A., 1468.
Iodides, direct oxidation of, at high pressures, A., 461.
 reduction of hydrogen peroxide by, A., 41.
 detection of, in presence of bromides, chlorides, and thiocyanates, A., 462.
 in presence of chlorates, bromates, and iodates, A., 52.
 titration of, with starch iodide as indicator, A., 1336.
 determination of, by photometric titration, A., 1091.
 volumetrically, by Fajan's method, A., 316.

Iodine :—
Iodides, determination of, in small amounts, and its application in determination of metals, A., 717.
 in presence of bromides and chlorides, potentiometrically, A., 595.
 in presence of other halides, colorimetrically, A., 595.
Iodic acid, and its salts, Raman spectra of, A., 1301.
 action of, with oxalic acid, A., 587, 1334.
Iodates, electroreduction and determination of, A., 1079.
 detection and determination of, in presence of bromates and chlorates, A., 53.
Periodic acid, and its salts, A., 51.
 preparation of, A., 716.
 oxidation of polyhydroxy-compounds by, A., 454.
 reaction of, with α -ketols, α -diketones, and α -ketoncaldehydes, A., 1483.
Iodine detection and determination :—
 detection of, A., 53.
 sensitivity of starch reaction for, A., 183.
 microchemically, A., 836.
 in organic compounds, A., 876.
 determination of, potentiometrically, A., 183.
 in acid solution, A., 836.
 in biological material, A., 1182.
 in blood, A., 231.
 in blood and thyroid, A., 104.
 in mercury compounds, volumetrically, A., 595.
 in organic compounds, by Prégel micro-combustion method, A., 1515.
 in salt, microchemically, B., 990.
 in soils, B., 740.
 in urine, A., 238.
Iodine ions, negative, A., 677.
Iodine value, determination of, A., 876; B., 859.
 potentiometrically, B., 683.
 titrimetrically, with bromine vapour, A., 728.
Iodo-acids, fatty, A., 1482.
Iodoform, oxidation of, A., 454.
Iodomercuric acid. See under Mercury.
Iodo-silver benzoate complex. See under Benzoic acid, silver salt.
Ions, sources of, for mass spectroscopy, A., 677.
 classification of, with regard to diffusion, A., 1012.
 production of, in high vacua, A., 425.
 production of currents of, in high vacua, A., 677.
 anomalous movements of, A., 1324.
 acceleration of, A., 1440.
 measurement of migration of, A., 825.
 slide-rule to demonstrate migration of, A., 466.
 determination of activity of, A., 824.
 momentum of, leaving ionisation region, A., 801.
 hardening of, A., 801.
 displacement of, in electrolytes by short discharges, A., 1535.
 recombination of, A., 1193.
 overvoltage theory and simultaneous discharge of different species of, A., 450.
 diamagnetic susceptibility and polarisability of, A., 14.
 electrostatic energy of lattices of, A., 685.
 adsorption energy of, A., 27.
 equilibrium between micelles and, A., 299.
 adsorbed, interchange of, A., 160.

Ions, amphoteric, use of "dissimulation" in study of, A., 1444.
 atmospheric, mobility and counting of, A., 466.
 colloidal. See Colloidal ions.
 complex, A., 582, 824.
 structure of, A., 1061.
 absorption spectra of, A., 1188.
 gaseous, mobility of, in relation to temperature, A., 909.
 large, combination coefficients for, A., 1294.
 negative, formation of, in gases, A., 140.
 paramagnetic, Weiss constant of, A., 814.
 positive, sources of, A., 140.
 currents of, in high vacua, A., 599.
 speed of, in nitrogen, A., 5.
 production and focussing of beams of, A., 1185.
 production of intense beams of, A., 140.
 rapid, experiments with, A., 276.
 small, apparatus for counting of, A., 320.
Ionisation, theory of, A., 1047.
 measurement of, A., 58.
 of gases in relation to temperature, A., 677.
 by photons and corpuscular radiation, A., 1185.
Ionisation constants, temperature variation of, in aqueous solution, A., 823.
Ionium, decay constant of, A., 1440.
 adsorption of, by manganese, A., 28.
Ionone, action of magnesium on mixture of, with $\alpha\delta$ -dibromo- Δ^2 -butene, A., 979.
 β -Ionone, unsaturated compounds from, A., 492.
Ionones, syntheses with, A., 611.
 α - and β -Ionones, *m*-nitrobenzhydrazides and 2:4-dinitrophenylhydrazones of, A., 743.
Ionono series, fulvenes in, A., 203.
Ionosphere, structure of, A., 1298.
Ipecacuanha, preparation of dry extracts of, B., 253.
 roots, determination in, of alkaloids, B., 1117.
Ipecacuanha alkaloids, localisation of, in roots, A., 796.
 in *Rubiaceae*, B., 477.
Ipomæa batatas. See Potatoes, sweet.
Iridæa laminarioides, polysaccharides of, A., 268.
 properties of proteins of, A., 268.
Iridium, isotopes of, A., 1295.
L X-ray spectrum of, A., 676.
 radioactivity of, A., 678.
 displacement of, by hydrogen, A., 824.
 tervalent, bromo-salts of, A., 1471.
Iridium compounds, with thiocarbamide, A., 461.
Iridium organic compounds :—
 Iridium dipyridinobromo-compounds, A., 868.
 Iridiumaquodipyridine trichlorides, A., 946.
Iridium determination :—
 determination of, by electro-titration, A., 464.
 microchemically, A., 56.
Iris, Chinese, vitamin-C from, A., 262.
 of eyes. See under Eyes.
Iron, B., 807.
 at. wt. and isotopes of, A., 802.
 nuclear evolution of cobalt, nickel, and, A., 1442.
 structural changes in, during creep, B., 951.
 production of, (P.), B., 906.
 in Minette blast furnaces, B., 150.

Iron, production of, from ores, B., 103, 548; (P.), B., 105.
 and Portland cement, (P.), B., 503.
 ammonia in blast furnaces for, B., 25.
 Bessemer converters for, B., 309.
 relationship between blowing time and output in, B., 189.
 treatment of, for cold-working, (P.), B., 314.
 furnaces for heat treatment of, (P.), B., 810.
 treatment of dust from blast furnaces for, (P.), B., 1051.
 refining of, by vacuum distillation, B., 853.
 slag for, (P.), B., 956.
 removal of sulphur from, B., 853.
 Duplex puddling of, (P.), B., 503.
 surface carbonisation of, (P.), B., 314.
 and its alloys, cementation of, (P.), B., 235, 503.
 hardening of, by nitriding, (P.), B., 106.
 case-hardening of, (P.), B., 314, 503, 638, 730, 1147.
 and its alloys, (P.), B., 106.
 tables of hardness for, B., 272.
 effect of gases in, on solidification of ingots, B., 995.
 welding electrode for, (P.), B., 1053.
 decay of welds in, B., 554.
 soldering of, (P.), B., 157.
 influence of impurities on notched impact strength of, B., 230.
 morphology of inclusions in, B., 951.
 electron-optical study of transformations of, between 500° and 1000°, A., 1451.
 heat effects in transformations of, A., 922.
 two-stage transformation in, B., 728.
 phosphate complexes of, A., 166.
 spectrum of, A., 1045.
 infra-red spectrum of, A., 145.
 K-series X-ray spectra of, A., 556.
 electronic energy of, A., 909.
 electrical resistance of, below the Curie point, A., 1062.
 electrochemical potential and corrosion of, A., 306.
 changes of potential of, in nitric acid, A., 706, 1325.
 surface layers on, shown by its potential in water, A., 826.
 electrodeposition of, (P.), B., 909.
 for wearing surfaces, B., 595.
 anodic behaviour of, in sodium chloride and hydrochloric acid solutions, A., 1326.
 interior magnetic field in, A., 1452.
 improving magnetic properties of, (P.), B., 504.
 preparation of single crystals of, A., 1307.
 magnetisation of single crystals of, A., 1309.
 Piobert effect in, B., 1046.
 change in volume of, on solidification, B., 548.
 molten, production of, (P.), B., 503.
 optical measurement of temperature of, B., 904.
 solubility of nitrogen in, B., 1144.
 reaction of dissolved carbon in, on oxides, A., 1090.
 adsorption of hydrogen by, A., 578.
 nitrogen absorption on fusion of, in electric arc, A., 167.
 diffusion of non-metals in, A., 692.
 permeability of, A., 19.
 ferromagnetic permeability of, A., 435.
 solubility of copper in, A., 816.
 solubility of nitrogen in, A., 577.

Iron, cinematographic record of $\alpha \rightleftharpoons \gamma$ transition in, A., 1452.
 γ - α change in, A., 570.
 phase equilibria in, B., 152.
 equilibria of, with cementite, A., 291.
 with its oxide and calcium ortho-ferrite, A., 303.
 with manganese, B., 229.
 and its oxides, with phosphorus and its oxides, A., 1077.
 corrosion of, B., 104, 311, 635, 1048, 1145.
 effect of repeated bending on, B., 410.
 influence of high-frequency current on, B., 27.
 effect of p_H on, A., 43.
 by acids, in presence of sulphur dioxide, B., 633.
 in presence of sulphur dioxide and hydrogen sulphide, B., 1048.
 by benzene and petroleum, B., 727.
 in calcium chlorate solutions, B., 410.
 by furfuraldehyde, B., 104.
 by hydrogen under pressure, thermodynamics of, A., 584.
 by sulphuric acid, effect of arsenic on, B., 498.
 influence of organic hydroxy-compounds on, in oxygenated salt solutions, B., 1048.
 corrosion and hot-galvanising of, B., 1048.
 accelerated corrosion tests on, in salt solutions, B., 311.
 corrosion of dykes of, in river- and sea-water, B., 498.
 corrosion of tinned containers of, for foods, etc., B., 27.
 non-corrosion of, by pure air at saturated humidity, A., 834.
 rusting and passivation of, B., 26.
 effect of pressure in rusting of, B., 633.
 prevention of rusting of, (P.), B., 235.
 passivity of, in nitric acid solutions, A., 172, 827, 1463.
 coating of, with aluminium, (P.), B., 157.
 with aluminium and its alloys, (P.), B., 1147.
 with corrosion-resisting alloy, (P.), B., 638.
 with lead, (P.), B., 314.
 coating and cleaning of, (P.), B., 315.
 production of anticorrosive coatings on, (P.), B., 638.
 corrosion-resisting coatings for, (P.), B., 735.
 production of phosphate coatings on, (P.), B., 810.
 cleaning and protection of, against rusting, (P.), B., 315.
 pickling of, (P.), B., 155.
 solutions for, (P.), B., 680, 810.
 with acids in presence of regulators, B., 498.
 cyaniding of, B., 498.
 electroplating of, with copper, at high current densities, B., 1050.
 fluxes for galvanising of, (P.), B., 907.
 reactions in galvanising of, B., 191.
 tin-plating of, (P.), B., 157.
 cleaning of tinned surfaces of, (P.), B., 907.
 preparation of, for painting, B., 1146.
 protection of, from corrosion, with paints, B., 238.
 effect of mill-scale on rising of paint on, B., 636.
 priming paints for, B., 464.
 painting of structures of, B., 160.
 tests on paints for, B., 636.

Iron, effect of oxygen and sulphur on scaling of, B., 633.
 blue and black coloration of, in fused salt baths, B., 633.
 films causing temper colours on, B., 359.
 natural oxide film on polished surfaces of, A., 38.
 influence of oxide films on wearing of, B., 1097.
 gas trapped in enamels during enamelling of, B., 544.
 catalysis of ortho-para conversion of hydrogen by, A., 1329.
 oxidation of, A., 51.
 reoxidation of, in the blast furnace, B., 409.
 anodic oxidation and protection of, in salt solutions, B., 28.
 reactions of, in wines, A., 51.
 condition of old specimens of, B., 994.
 removal of, from water and salt solutions, (P.), B., 832.
 in quantitative analysis, A., 55.
 treatment of containers of, for transformer oils, (P.), B., 555.
 and its alloys, use of, in furnace construction, B., 25.
 assay of sugared pharmaceutical preparations of, B., 253.
 content of, in pastures, A., 553.
 availability of, in animal and vegetable material, A., 115.
 toxicity of, in excess, A., 781.
 in human blood, A., 509.
 content of, in dog's liver and spleen, A., 644.
 catalytic action of, in the body, A., 781.
 storage of, in new-born infants, A., 1263.
 effect of calcium, phosphorus, and vitamin-D on retention of, in rats, A., 1036.
Iron, carbonyl, grain growth in, A., 1307.
 cast, manufacture of, (P.), B., 555, 998.
 in electric furnaces, B., 309.
 use of sodium carbonate in refining of, B., 26.
 decarburisation of, with hydrogen, B., 189.
 growth of, by heating, B., 1046.
 castability of, B., 25.
 forging of, B., 904.
 hardening of, B., 676.
 and its alloys, hardening and tempering of, B., 593.
 nitrogen hardening of, B., 310.
 refractories for foundries for, B., 993.
 physical properties of, B., 309.
 tensile strength of, B., 309.
 electrical and heat conductivity of, B., 103.
 coefficient of expansion of, B., 309.
 electric melting of, B., 409.
 molten, surface films on, B., 309.
 study of fusion and over-heating of, with cupola furnace, B., 593.
 wall-thickness sensitivity of test pieces of, B., 770.
 formation of rust showing configuration of stream lines in, B., 104.
 influence of aluminium on, B., 853.
 effect of molybdenum on, B., 150.
 application of, in chemical engineering, B., 358.
 for boilers, B., 1049.
 gain and loss of carbon from, in cupolas, B., 409.
 enamelling of stoves of, B., 630.
 internal corrosion of waste-pipes of, B., 1097.
 produced in electric furnaces, B., 309.

Iron, cast, aluminium-manganese-silicon, B., 549.
 austenitic, low-carbon nickel-manganese, physical properties of, B., 633.
 grey, effect of casting conditions on properties of, B., 189.
 influence of melting with oxide slags on, B., 409.
 improvement of, B., 358, 633.
 influence of copper on, B., 853.
 use of, in moulds for glass, B., 673.
 heat-resistant, B., 676.
 high-strength, manufacture of, (P.), B., 595.
 malleable, (P.), B., 192, 413.
 ferrite in, B., 1046.
 manufacture of articles from, (P.), B., 1147.
 manganese-nickel, physical properties of, B., 358.
 phosphorus, microscopy of, B., 358.
 white, decarburisation of, B., 498.
 hardness of, B., 358.
 graphitisation rates in, B., 151.
 manufacture of articles from, (P.), B., 313.
 determination in, of chromium and vanadium, B., 359.
 of silicon, B., 358.
 of titanium, B., 410, 952.
 of titanium and vanadium, B., 358.
 catalytic, exchange between ammonia and deuterium on, A., 710.
 adsorption of hydrogen by, A., 1315.
 specificity of, in reaction between hydrogen peroxide and pyrogallol, A., 940.
 electrolytic, ductile, manufacture of, (P.), B., 234.
 ferrous, arsenic test for, A., 318.
 determination of, in glass, B., 850.
 in materials containing metallic iron and ferric iron, A., 319.
 finely-divided, preparation of, A., 941.
 galvanised, corrosion of, B., 1046.
 corrosion of, in boiling water and air-steam mixtures, B., 410.
 determination in, of zinc, B., 26.
 grey, structure of welds in, B., 498.
 inorganic, determination of, in human tissues, A., 377.
 irradiated, biological action of, A., 1154.
 lead-coated, determination in, of lead, B., 457.
 low-carbon, production of, (P.), B., 234.
 malleable, manufacture of, (P.), B., 29*.
 structure of welds in, B., 498.
 effect of copper in, B., 1046.
 galvanised, production of, (P.), B., 193.
 native, from West Greenland, A., 1100.
 oxidised, surface structure of, A., 813.
 pig, temperature losses in, between blast furnace and converter, B., 62.
 equilibrium in removal of phosphorus from, B., 676.
 desulphurisation of, B., 409, 807.
 recovery of vanadium from, (P.), B., 503.
 coating of moulds for casting of, (P.), B., 679.
 cold-blast, synthetic mixtures for, B., 1046.
 Magnetigorsk, spectral analysis of, B., 1046.
 reduced, assay of, B., 359.
 rustless, manufacture of, (P.), B., 637.
 sheet, finishing of, (P.), B., 273.
 use of sodium cyanide in pickling baths for enamelling of, B., 1097.
 enamels for. See under Enamels.

Iron, sheet, enamelled, manufacture of, (P.), B., 234.
 Epstein test for, B., 676.
 siliceous, determination in, of slag inclusions, B., 410.
 sponge, manufacture of, (P.), B., 234, 461, 1051.
 kilns for, (P.), B., 1098.
 nitrogen content of, B., 103.
 properties of steel from, B., 1144.
 vitreous enamelled, use of, in architecture, B., 1097.
 wrought, production of, B., 103, 413; (P.), B., 906, 1147.
 effect of nickel on, B., 904.
 corrosion of, B., 410.
Iron alloys, manufacture of, (P.), B., 273, 461, 637, 998.
 case-hardening of, (P.), B., 907.
 hardness of, and their wear on emery paper, B., 677.
 casting of anti-friction alloys on, (P.), B., 910.
 heavy castings of, B., 904.
 die-casting with, (P.), B., 413.
 cementation of, with beryllium, B., 311.
 protective films on, B., 952.
 welding rods for, (P.), B., 556.
 electrochemical cladding of, B., 809.
 improving magnetic properties of, (P.), B., 504.
 influence of grain size on high-temperature characteristics of, B., 501.
 corrosion resistance of, B., 636.
 non-metallic inclusions in, B., 594.
 rôle of titanium in, B., 360.
 for casting, (P.), B., 65.
 free from graphite, (P.), B., 273.
 for permanent magnets, (P.), B., 772.
 for rolls, (P.), B., 1147.
 chemical-resistant, heat-resistance of, B., 550.
 corrosion-resisting, (P.), B., 504.
 hardenable, (P.), B., 314.
 heat- and corrosion-resistant, (P.), B., 413.
 heat-resistant, production of, (P.), B., 810.
 low-carbon, manufacture of, (P.), B., 504.
 low in oxygen, production of, (P.), B., 66.
 magnetic, X-ray structure of, A., 1066.
 manufacture of, (P.), B., 998, 999.
 rustless, (P.), B., 998.
 stainless, manufacture of, (P.), B., 461.
 ternary, effect of heat treatment on properties of, B., 727.
 wear-resisting, (P.), B., 907.
 determination in, of carbon and sulphur, B., 272.
 of chromium and nickel, in presence of manganese and carbon, B., 499.
 of molybdenum and titanium, potentiometrically, B., 677.
 of sulphur, B., 311.
 of titanium, B., 410.
Iron alloys with aluminium, A., 693.
 crystal structure of, A., 285, 433.
 X-ray analysis of, A., 158.
 with aluminium and mercury, A., 23.
 with aluminium and nickel, for permanent magnets, (P.), B., 810.
 magnetic, (P.), B., 504, 857.
 analysis of, B., 771.
 with beryllium, A., 816.
 with carbon, (P.), B., 998.
 specific heat of, at high temperatures, A., 690.
 surface tension of, A., 811.
 manufacture of articles from, (P.), B., 234.

Iron alloys with chromium, B., 594; (P.), B., 155.
 manufacture of, (P.), B., 907.
 arc-welding of, B., 728.
 thermal expansion and transformation in, B., 1145.
 m.p. of, B., 63.
 resistance, m.p. of, B., 499.
 with chromium and nickel, austenitic, acceleration by sinusoidal tension of tempering of, B., 994.
 corrosion-resistant, (P.), B., 907.
 with chromium, nickel, and carbon, mechanical properties of, A., 23.
 with chromium and nitrogen, A., 1455.
 with chromium and silicon, carbon solubility of, A., 23.
 with cobalt, for precipitation-hardening, (P.), B., 504, 998.
 crystalline, magnetometer for, A., 1341.
 magnetic, spectral analysis of, B., 594.
 with cobalt and nickel, (P.), B., 235.
 for sealing into glass, (P.), B., 106.
 with cobalt, nickel, and titanium, for permanent magnets, (P.), B., 810.
 with cobalt and tin, A., 1066.
 with cobalt and titanium, A., 926.
 with copper, manganese, and nickel, A., 927.
 with copper and nickel, A., 926.
 electrodeposition of, A., 175.
 with copper, nickel, and tin, B., 27.
 with copper and tin, cast, production of, B., 853.
 with manganese, irreversible, transformations in, A., 1314.
 with molybdenum and nickel, A., 23.
 with neodymium, magnetic, A., 159.
 with nickel, X-ray structure of, A., 1199.
 lattice distortion in, A., 919.
 manufacture of, (P.), B., 235.
 electrodeposition of, B., 413, 905; (P.), B., 858.
 solution of electrodeposits of, A., 1199.
 electroplating with, B., 729.
 electrical properties of wires of, A., 815.
 negative Matteucci effect in wires of, A., 1452.
 magnetisation of, A., 813.
 elastic constants of, on magnetisation, A., 816.
 ferromagnetism of, A., 19.
 rolling and recrystallisation texture of, B., 855.
 in relation to magnetic properties, B., 855.
 separation of crystals of, A., 287.
 irreversibility of, A., 1456.
 for turbine blades, (P.), B., 314.
 cold-rolled, magnetic behaviour of, due to separation-hardening, B., 905.
 magnetic, (P.), B., 556, 956.
 manufacture of, (P.), B., 235.
 with nickel and tungsten, hardening of, by heat, B., 360.
 with phosphorus, magnetic, manufacture of (P.), B., 235.
 with platinum, magnetic properties of, A., 1199.
 with silicon, discontinuous changes in magnetisation in, A., 287.
 Bitter powder patterns of crystals of, A., 1449.
 quantitative spectrographic analysis of, B., 854.
 with tantalum, A., 1199.
 with tin, preparation of, A., 181.
 with zinc, high crystallising force in formation of, B., 677.

Iron alloys. See also Ferrochromium, Ferrocobalt, Ferromanganese, Ferrosilicon, Ferrotitanium, and Ferrotungsten.

Iron alloys:—

Steel, B., 807.
etching agent for investigation of coarse structure of, B., 854.
secondary crystallisation and Widmannstätten structures in, B., 550.
manufacture of, (P.), B., 106, 273, 679, 857, 906, 999.
in basic electric furnaces, B., 1144.
by basic open-hearth process, B., 409, 807.
open-hearth furnaces for, (P.), B., 595.
refractories for, B., 409.
by Bessemer process, (P.), B., 906.
in blast furnaces with smelting of acidic ores, B., 853.
laboratory induction furnaces for, B., 150.
by Perrin process, B., 498.
from ores, B., 103, 548.
from sponge iron, B., 103.
removal of carbides from slag from, B., 548.
distribution of phosphorus between metal and slag in basic process for, B., 951.
physical chemistry of, B., 854.
and Portland cement, (P.), B., 503.
refining of, (P.), B., 106, 155.
removal of gases and sulphides from, (P.), B., 235.
effect of water vapour on surface decarburisation of, by hydrogen, B., 151.
oxidising briquettes for decarburising open-hearth baths for, (P.), B., 461.
subcutaneous effects in scaling of, B., 1047.
scaling and surface decarburisation of, B., 230.
deoxidation of, B., 498; (P.), B., 503.
effect of deoxidation on, B., 634.
dephosphorisation of, (P.), B., 772.
desulphurisation and purification of, (P.), B., 906.
reactions in desulphurisation of, B., 409.
removal of sulphur from, B., 853.
grain size, hardenability, and normality of, B., 549.
annealing of, refractory bricks for furnaces for, B., 727.
casting of, semi-acid brick for ladles for, B., 851.
mould for, (P.), B., 999.
cementation of, (P.), B., 235.
and its alloys, (P.), B., 503.
etching of cementite in, B., 457.
treatment of, for cold-working, (P.), B., 235, 314.
metallurgical control of forging of, B., 359.
structure and tensile properties of large forgings of, B., 358.
hardening of, (P.), B., 66, 503, 1098.
and its alloys, (P.), B., 155.
by nitriding, (P.), B., 106.
due to martensite and to separation of other constituents, B., 230.
without distortion, B., 593.
age-hardening of, B., 904.
case-hardening of, (P.), B., 314, 461, 638, 730, 906, 1147.
influence of alloy elements on, B., 677.
nitrogen case-hardening of, B., 853.
nitrogen-hardening of, B., 550.
surface hardening of, by oxy-acetylene flames, B., 410.
Brinell and scratch hardnesses of, B., 230.

Iron alloys:—

Steel, tables of hardness for, B., 272.
heat treatment of, (P.), B., 234, 314.
continuous furnace for, (P.), B., 192.
furnaces for, (P.), B., 810.
regulation of heat in, B., 676.
effect of alloyed metals and heat treatment on strength of, B., 1145.
fissures in, during heat treatment, B., 359.
internal fissures in, B., 1145.
fracture of, at high temperatures, B., 593.
quenching of, in water, brine, and oil, B., 728.
in hot lead, B., 151.
welding of, (P.), B., 504.
gain of phosphorus from acetylene in, B., 594.
welding electrodes for, (P.), B., 1053.
mechanical properties of "spot" welds in, B., 728.
X-ray photograph and tensile properties of welds in, B., 230.
surface treatment of, (P.), B., 193.
embrittlement of, due to soaking at high temperatures, B., 854.
temper-brittleness of, B., 359.
influence of phosphorus on, B., 1144.
testing of, for embrittlement after heating and strain, B., 63.
influence of structure on durability of, B., 676.
influence of nitrogen and oxygen on mechanical ageing of, B., 728.
treatment of, to overcome brittleness on ageing, (P.), B., 66.
influence of hydrogen overvoltage on tensile strength of, A., 171.
overvoltage and cathodic brittleness of, A., 171.
mould for joining bronze and, (P.), B., 314.
bonding strength of babbitt metal to bronze and, B., 152.
bend test as guide to ductility of, B., 549.
plasticity of, and its fracture at high temperatures, B., 549.
P-F characteristic of, B., 499.
elastic properties of, at high temperatures, B., 548.
resistance of, to creep, B., 230.
effect of composition and heat treatment on creep limit of, B., 103.
creep tests on, B., 1047.
comparison of single-step, long-time creep results with time-yield stress results on, B., 190.
influence of oxide films on wear of, B., 26.
Al transformation range in, B., 676.
two-stage transformation in, B., 728.
morphology of inclusions in, B., 951.
influence of copper and nickel on, B., 272.
iron alloys for addition to, B., 854.
role of manganese in, B., 677.
non-metallic inclusions in, B., 634, 1047.
oxide inclusions in, B., 360.
occurrence and determination of oxygen in, B., 728.
sulphur prints and sulphide inclusions in, B., 677.
role of titanium in, B., 360.
flakes in, B., 457.
origin of, B., 633.
properties of, B., 1145.
influence of primary crystallisation on, B., 359.
electrolytic transport of carbon in, A., 1205.

Iron alloys:—

Steel, effect of heat treatment on magnetic saturation of, B., 63.
treatment of, for permanent magnets, B., 151.
melting of, basic refractories for furnaces for, B., 22.
molten, production of, (P.), B., 313, 503.
thermodynamics of deoxidation of, B., 457.
measurement of temperature of, B., 62.
optical measurement of temperature of, B., 904.
determination of oxides in, B., 854.
diffusion of hydrogen through, during acid corrosion, B., 457.
diffusion of non-metals in, A., 692.
penetration of, by soft solder and molten metals, B., 550.
penetration of brass solder into, after hydrogen absorption, B., 411.
corrosion of, B., 26, 410, 635, 1048.
by hydrogen and hydrogen sulphide at high pressure and temperature, B., 634.
by sulphuric acid, B., 550.
in solutions, B., 63.
effect of dissolved oxygen and carbon dioxide on, B., 807.
in water vapour at high temperatures and pressures, B., 1048.
in aqueous solutions, effect of light on, B., 191.
atmospheric corrosion of, B., 635.
marine corrosion of, B., 635.
corrosion of sleepers of, in mines, B., 635.
corrosion and hot-galvanising of, B., 1048.
corrosion-resistance of, B., 550.
anti-corrosive action of oils on, B., 63.
passivity of, in nitric acid, A., 172, 827, 1463.
coating of, with aluminium and its alloys, (P.), B., 1147.
with corrosion-resisting alloy, (P.), B., 638.
corrosion-resisting coatings for, (P.), B., 735.
production of anti-corrosive coatings on, (P.), B., 638.
protective coating for prevention of oxidation of, on heating, (P.), B., 907.
production of phosphate coatings on, (P.), B., 810.
determination of porosity of tin coatings on, B., 457.
detection of unsound spots in zinc coatings on, B., 1050.
pickling of, (P.), B., 155.
inhibitors for, (P.), B., 907.
electro-pickling of, (P.), B., 315.
testing of nickel- and chromium-platings on, B., 192.
tin-plating of, (P.), B., 157.
interference colours on, A., 807.
preparation of, for painting, B., 1146.
adherence of white groundcoat enamels for, B., 1093.
solidification of, in ingot moulds, B., 151, 995.
glass-lined plant of, for brewing and kindred industries, B., 1048.
for German plant, restriction of foreign raw materials for, B., 1047.
from sponge iron, B., 1144.
testing of, at high temperatures, B., 26.
magnetic detection of defects in, (P.), B., 906.
detection of faults in, by X-ray photographs, B., 502.
detection of faulty welds in, B., 310.

Iron alloys:—

Steel, determination in, of aluminium, B., 310.
 of aluminium oxide, B., 410.
 of chromium, B., 151.
 of chromium, manganese, and vanadium, volumetrically, B., 64.
 of chromium, molybdenum, and vanadium, potentiometrically, B., 63.
 of cobalt, B., 551.
 of copper, B., 360.
 of ferrous and manganous oxides, B., 499.
 of manganese, by persulphate-arsenite method, B., 854.
 spectrophotometrically, B., 272, 1047.
 of molybdenum, B., 410.
 colorimetrically, B., 360, 952.
 of molybdenum and titanium, potentiometrically, B., 677.
 of nitrogen, B., 995.
 of oxides, by iodine method, B., 551.
 of oxygen, by "vacuum-aluminium" method, B., 410.
 by "vacuum-fusion" method, B., 995.
 of phosphorus, B., 64.
 of sulphur, B., 634.
 by combustion method, B., 854.
 of titanium, B., 410.
 colorimetrically, B., 952.
Steel, alloy, (P.), B., 679, 1147.
 structure and constitution of, B., 151.
 transformation of austenite in, B., 854.
 production of, (P.), B., 461.
 metals for, B., 360.
 heat- and corrosion-resistant castings of, B., 728.
 case-hardening of, by nitrogeuisation, (P.), B., 556.
 surface hardening of, (P.), B., 503.
 hydrogenation of, (P.), B., 235.
 plant for, (P.), B., 679.
 for aircraft, B., 272, 728.
 for cold-drawing dies, (P.), B., 155.
 for high-temperature boiler plates, (P.), B., 106.
 for hydrogenation apparatus, (P.), B., 155, 556.
 tubes of, for manufacture of petroleum, B., 1048.
 for refining of petroleum, B., 483.
 for valves working at high temperatures, (P.), B., 66.
 hardened, manufacture of, (P.), B., 193.
 heat-resistant, welding of, B., 1097.
 analysis of, use of perchloric acid in, B., 64.
 spectroscopic analysis of, B., 64.
 determination in, of chromium and vanadium, B., 359.
 of molybdenum in presence of tungsten, B., 458.
 of vanadium, volumetrically, B., 594.
 austenitic, surface hardening of, (P.), B., 503.
 austenitic and high chromium, nitriding of, B., 550.
 austenitic manganese, welding of, B., 594.
 automotive, effect of grain-size on hardness and toughness of, B., 550.
 Bessemer, production of, by Tochinski's method, B., 676.
 dephosphorisation of, with liquid slags, B., 676.
 grain size of, B., 549.
 carbon, formation of Widmanstätten structure in, B., 499.

Iron alloys:—

Steel, carbon, structures in transition zone between quenched and non-quenched parts of, B., 103.
 manufacture of, in top-charge arc furnaces, B., 1097.
 effect of deoxidation on rate of ferrite formation in, B., 995.
 effect of deoxidation on grain size and grain growth in, B., 996.
 welding of, with resistance-heating, B., 634.
 mechanical properties of, melted *in vacuo* and gases, B., 995.
 fatigue and recovery of, under repeated impact, B., 359.
 influence of composition on mechanical properties of castings of, B., 499.
 hardened, impact-resistance of, B., 676.
 open-hearth, control of grain-size of, B., 550.
 0.8% carbon, tempering and ageing of, B., 26.
 carbon-chromium, transformation, hardening, and tempering in, B., 727.
 case-hardened, physical properties of, B., 904.
 cast, micro-structure of, B., 770.
 chromium, B., 151.
 production of, (P.), B., 155, 461, 504.
 transformation of austenite in, B., 359.
 arc-welding of, B., 728.
 oxygen-cutting of, B., 594.
 solubility of, in zinc, B., 191.
 defects in, and their elimination, B., 499.
 analysis of slags from, B., 26.
 corrosion-resisting, (P.), B., 504, 679.
 corrosion- and heat-resistant, heat treatment of, (P.), B., 907.
 and chromium-nickel, determination of corrosion-resistance of, B., 1048.
 determination in, of aluminium, titanium, and zirconium, B., 807.
 chromium-molybdenum, banding in, B., 190.
 chromium-molybdenum-vanadium, nitrogen-hardening of, B., 458.
 chromium-nickel, (P.), B., 106, 907.
 flocks in, B., 499.
 heat treatment and uses of, B., 807.
 18:8, high-temperature tensile, creep, and fatigue of, B., 190.
 containing carbon and sulphur, spectrographic analysis of, B., 551.
 lead-coated, drawing of wires of, B., 550.
 chromium-titanium, welding of, (P.), B., 1098.
 cold-rolled band, effect of pre-treatment and rolling on, B., 676.
 constructional, rusting and scaling of, under tensile stresses, B., 855.
 copper, B., 728.
 carburising of, B., 594.
 corrosion of, B., 231.
 for dynamos and transformers, B., 855.
 copper-molybdenum, determination in, of copper, B., 636.
 corrosion-resistant, (P.), B., 504, 907.
 use of, in nitrogen manufacture, B., 458.
 corrosion- and heat-resisting, determination in, of nitrogen, B., 64.
 electric, detection of distortion in, A., 1193.
 forging, effect of sulphur on, B., 1047.
 free-cutting, (P.), B., 857.
 free-scaling, (P.), B., 106.

Iron alloys:—

Steel, hard, welding of, B., 677.
 metallographic testing of, B., 63.
 heat-resistant, creep properties of, B., 26.
 high-carbon, coarse-grained recrystallisation of, B., 26.
 high-chromium, improving workability of, (P.), B., 66.
 effect of nitrogen on, B., 677.
 high-manganese, high silicon, production of, (P.), B., 106.
 high-speed, B., 1047; (P.), B., 679.
 production of, in coreless induction and arc furnaces, B., 457, 499.
 heat treatment of, (P.), B., 504.
 containing molybdenum and tungsten, B., 905.
 molybdenum-low tungsten, B., 1047.
 determination in, of vanadium, B., 854.
 hypereutectoid, influence of non-metallic inclusions on precipitation of cementite in, B., 854.
 low aluminium-low chromium, nitriding of, B., 550.
 low-carbon, embrittlement of, B., 549.
 expansion on annealing of, B., 904.
 Lüders' lines and strain figures in, B., 807.
 oxidation of, between 900 and 1150°, B., 634.
 effect of cold-work on structure of tubes of, B., 190.
 rolled and annealed, directional properties in, B., 904.
 low-vanadium, carbides in, B., 230.
 magnet, double-yoke testing apparatus for, B., 905.
 manganese, solubility of, in zinc, B., 191.
 for bridges, B., 499.
 manganese-nickel, for welding, (P.), B., 273.
 manganese-silicon, effect of heat treatment on, B., 905.
 influence of cold-work on tempering of, B., 1145.
 manganese-sulphur, B., 360.
 mild, structural changes in, during creep, B., 951.
 effect of coatings in welding of, B., 594.
 elastic properties of, B., 1047.
 effect of prolonged stress at 300° on, B., 951.
 pickling of sheets of, B., 457.
 lower yield point in, B., 27.
 molybdenum, local hardening of, (P.), B., 907.
 nickel, segregation of ingots in forgings of, B., 808.
 welding of, B., 594.
 oxygen-cutting of, B., 594.
 solubility of, in zinc, B., 191.
 nickel-aluminium, for magnets, B., 310.
 open-hearth, residual metals in, B., 634.
 painted, rusting of, B., 365.
 precipitation-hardened, internal stress in, B., 62.
 quenched, effect of tempering on magnetic saturation of, B., 63.
 resistant, for woodworking, B., 996.
 rimming, manufacture of, B., 190.
 rustless, theory of resistance of, to corrosion, B., 635.
 intercrystalline corrosion in, B., 311.
 self-hardening, magnetic study of, B., 593.
 sheet, enamels for, B., 405.
 opacity development in cover enamels for, B., 1093.
 effect of reboiling on cobalt and nickel oxides in ground-coats for, B., 767.

Iron alloys:—

Steel, sheet, deep-drawing capacity of, B., 62.
 for deep drawing, grain size of, B., 677.
 silicon, manufacture of, (P.), B., 556, 957*.
 manufacture of sheets of, (P.), B., 999.
 prevention of ageing of sheets of, (P.), B., 907.
 soft, Piobert effect in, B., 1046.
 weathering tests on plates of, B., 359.
 special, 25 years' progress in, B., 594.
 austenite and martensite in, A., 1060.
 spring, B., 634; (P.), B., 155.
 resistance of, to repeated impact, B., 634.
 stainless, manufacture of, (P.), B., 273, 461.
 electrochemical removal of scale and oxide from, (P.), B., 638.
 bright annealing of, (P.), B., 193.
 action of cold-work on, B., 1047.
 resistance to nitric acid of welds in, B., 594.
 addition elements in, B., 634.
 chromium oxide inclusions in, B., 190.
 corrosion-resistance of, to cooling solutions, B., 807.
 increasing corrosion-resistance of, (P.), B., 907.
 properties and uses of, B., 634.
 use of, in architecture, B., 1097.
 in textile industry, B., 625.
 determination in, of chromium, B., 807.
 stressed, penetration of molten white metals into, B., 1047.
 structural, mechanical properties of, B., 905.
 fatigue in, B., 191.
 compression tests of, B., 230.
 tool, Swedish fracture test for, B., 549.
 Collet, (P.), B., 461.
 tungsten, high-speed, (P.), B., 595.
 determination in, of chromium, B., 63.
 of manganese, B., 64.
 vanadium, hardening and tempering of, B., 905.
 weather-resisting, B., 855.
Steel articles, case-hardening of, (P.), B., 503.
 surface-hardening of, (P.), B., 956.
 heat treatment of, (P.), B., 857.
 coating of, to prevent corrosion, (P.), B., 772.
 galvanisation of, (P.), B., 504.
 nitrogenisation of, (P.), B., 158*.
 cast, hardening of, (P.), B., 595.
 composite, manufacture of, (P.), B., 595.
 with wear-resisting surfaces, (P.), B., 155.
 bearings, uniform hardening of, B., 153.
 bolts, effect of cold-work on, B., 190.
 castings, surface-cracking of, during pickling, B., 411.
 cylinders, quenching of, B., 151.
 ingots, heterogeneity of, B., 994, 995.
 segregation in, B., 995.
 pipes, for water, failure of, B., 103.
 rails, heat treatment of, (P.), B., 503.
 building-up of, B., 594.
 wear of, B., 593.
 rollers, heat treatment of, (P.), B., 273.
 screws, production of, (P.), B., 907.
 sheets, electrical, insulation of, (P.), B., 315.
 electroplated, production of, (P.), B., 506.

Iron alloys:—

Steel sheets, mild, thermomechanical treatment of, (P.), B., 1099.
 thin, influence of composition on sticking of, B., 1047.
 strip, for razor blades, (P.), B., 106.
 strip and wire, coating of, (P.), B., 679.
 structures, protection of, by paint, B., 319.
 tools, treatment of, (P.), B., 999.
 tubes, oxy-acetylene welding of, B., 190.
 corrosion of, B., 190.
 vessels, corrosion inhibitor for, (P.), B., 907.
 wire, local martensite formation in, B., 26.
 influence of degree of drawing and tempering on internal stress in, B., 62.
 influence of carbon and heat treatment on ductility of, B., 410.
 fatigue properties of, B., 1046.
 effect of heavy oils and greases on fatigue strength of, B., 550.
 effect of storage on, B., 310.
 alloy, B., 310.
 18-8 chromium-nickel, corrosion resistance of, B., 152.
 cold-drawn, pearlitic structure of, B., 904.
 mild, ageing of, B., 634.
 wire ropes, work-hardening of, B., 310.
 wool, electroplating of, with cadmium, (P.), B., 811.
 work, rustproofing of, by zinc coatings, B., 457.
 structural, protective paints for, B., 561.
 works, use of coreless induction furnaces in, B., 811.
 Upper Silesian, working of gas producers in, B., 52.

Iron bases:—

Ferroammines, compounds intermediate between ferrocyanides and, A., 181.

Iron compounds, coagulation of water with, B., 127.

influence of, on proteolytic and peptolytic processes, A., 404.

complex, A., 1112.

Iron salts, magnetic properties of, A., 436.

absorption of, by green plants, A., 1289.

effect of, in diet, A., 1160.

determination of free acid in solutions of, B., 628.

Iron arsenide, crystal structure of, A., 920.

carbide, now, powder diagram of, A., 17.

See also Cementite.

caseinogenate, effect of ingestion of, on body weight and urine constituents in dogs, A., 115.

chlorides, emission spectra of, A., 1187.

nitrate, solubility of, with aluminium, potassium, and sodium nitrates, A., 928.

nitrides, active and inactive structure of, A., 812.

thermal decomposition of, A., 829.

oxides, thermomagnetic study of, A., 1067, 1310.

oxygen pressures of melts of, A., 1204.

peroxides, A., 1334.

phosphate, use of, as phosphate fertiliser, B., 866.

phosphide, heat of formation of, A., 304.

silicide. See Ferrosilicon.

sulphates, anhydrous, hydrated, and double, magnetic susceptibilities of, A., 14.

Ferric compounds, complex, with carboxylic acids, A., 461.

Iron:—

Ferric ions, reaction of, with silver, A., 824.

Ferric salts, paramagnetism of ions in aqueous solutions of, A., 814.

colloid systems of, with chromic salts, A., 1320.

electro-reduction of complexes of mannitol and, in alkaline solutions, A., 1462.

velocity of reaction of, with stannous salts in solution, A., 1082.

determination of, by conductometric and potentiometric titration, A., 319.

Ferric chloride, effect of calcium chloride on absorption spectrum of, A., 1051.

effect of concentration and age on colloidal properties of solutions of, A., 1074.

dissolving of tin in aqueous solutions of, A., 454.

keeping of solutions of, A., 314.

reaction of, with lithium carbonate in hydrofluoric acid, A., 1332.

titration of organic acids with, A., 1140.

chlorosulphate, A., 1335.

hydroxide, colloidal, fixation of, injected into the trachea, A., 654.

sols, preparation of, A., 1073.

influence of hydrophilic colloids on structure of, A., 932.

viscosimetry and structure of, A., 700.

viscosity of, A., 1073.

during coagulation by arsenic trisulphide sols, A., 1073.

effect of temperature on, in alcohol-ether mixtures, A., 700.

effect of alcohols on, A., 1074.

microcrystalline, preparation of, A., 314.

precipitated, adsorption of copper by, from ammoniacal solutions, A., 819, 930.

orthohydroxide, ageing and transformation of, A., 710.

gelatinous structure of, A., 932.

hydroxides and oxides, crystal structures of, A., 285.

formation of ozone in oxidation of, A., 1334.

oxide, production of ammonium sulphate and, from ferrous sulphate solutions, B., 722.

fluorescence of mixtures of, with zinc oxide, A., 1055.

magnetic properties of mixtures of, with cadmium, copper, and lead oxides, A., 158.

dissociation pressure of, and its equilibria with calcium oxide, A., 704.

adsorption by, of oxygen, A., 28.

solubility of, in aqueous sulphuric acid, A., 1078.

crystal structure of, A., 433.

crystal structure of natural hydrates of, A., 918.

gels, structure of, A., 32.

sorption of vapours by, A., 28.

sols, potentiometric study of formation and stability of, A., 296.

reversal of charge of, by electrolytes, A., 444.

mutual coagulation of oppositely charged sols and, A., 164.

precipitation of, in moranyl solutions, A., 164.

- Iron:—**
- Ferric oxide, equilibrium of, with aluminium oxide, A., 440.**
 - with aluminium and calcium oxides and silica, A., 448.
 - in cement, B., 675.
 - with calcium, aluminium and magnesium oxides, B., 547.
 - with ferrosferric oxide and oxygen, A., 1322.
 - catalytic activity of systems of magnesium oxide and, A., 44.
 - reduction of, by hydrogen, and re-oxidation of the reduced iron, A., 716.
 - phases formed in reduction of mixtures of oxides and, A., 35.
 - action of chlorine on, A., 453.
 - action of sodium chloride on alumina, silica, feldspar, kaolin, salt glaze, and, B., 187.
 - α -form, and its hydrates, A., 946.
 - active, heat content and lattice structure of, A., 1204.
 - β -form, monohydrate, crystal structure of, A., 433.
 - γ -form, preparation of, and its hydrate, A., 834.
 - crystal structure of, A., 1450.
 - colloidal ferromagnetic, use of, as biological indicator, A., 1182.
 - gelatin-coated, migration in, A., 821.
 - magnetite, crystal structure of, A., 920.
 - phosphate, anhydrous, A., 1090.
 - sulphate, basic, physico-chemical properties of solutions of, A., 296.
 - ammonium sulphate, basic, A., 51.
 - Ferrosferric oxide, production of, for pigments, (P.), B., 1092.**
 - recovery of, from residue from roasting of iron pyrites, (P.), B., 767.
 - equilibrium of, with ferric oxide and oxygen, A., 1322.
 - Ferrous salts, titration curve of, with dichromate, A., 1205.**
 - Ferrous chloride, formation and solvation of, in non-aqueous liquids, A., 1112.**
 - oxidation-reduction potential of ferric chloride and, in pyridine, A., 38.
 - anhydrous, anomalous specific heat of, A., 1198.
 - iodide, m.p. of, A., 574.
 - oxide, systems of, with magnesium oxide and silicon dioxide, A., 447.
 - determination of, in steel, B., 499.
 - sulphate, oxidation of, in aqueous solutions, A., 716.
 - by X-rays in sulphuric acid solution, A., 458.
 - hydrate, dissociation pressure of, A., 302.
 - electrolytic regeneration of pickle liquors of, (P.), B., 682.
 - production of ammonium sulphate and ferric oxide from solutions of, B., 722.
 - catalysis of decomposition of hydrogen peroxide by, A., 454.
 - waste, conversion of, into sulphuric acid, B., 493.
 - electrometric analysis of, A., 597.
 - sulphide, polymorphism in solid solutions of, A., 928.
 - miscibility of, with molten lead, A., 292.
 - equilibrium of, with manganese silicate, A., 1077.
 - Ferrites, formation and magnetic properties of, A., 1196.**
 - Iron organic compounds, containing calcium, A., 606.**
 - with phenanthroline, magnetic properties of, A., 923.
 - cyclic, formation of, A., 750.
 - Iron carbonyl, formation and effect of, in town gas, B., 660.**
 - anti-knock properties of, B., 1031.
 - Ferrous chloride, co-ordination compounds containing, A., 1112.**
 - Iron detection, determination, and separation:—**
 - quantitative spectral analysis of, A., 136.
 - analysis of tinctures of arsenic and, B., 429.
 - detection of, A., 837.
 - in presence of aluminium and chromium by benzoate method, A., 187.
 - spectrographically, in animal tissues, A., 377.
 - in dusts, B., 526.
 - determination of, by cerimetric titration with 2:2'-dipyridyl, A., 1095.
 - with cupferron, A., 721.
 - micro-volumetrically, with permanganate, A., 464.
 - in presence of aluminium and chromium, A., 838.
 - in presence of arsenic and phosphoric acids, A., 1472.
 - in biological fluids, A., 906.
 - in biological materials, A., 270, 1436.
 - in blood, A., 1001.
 - magnetically, A., 1262.
 - in complex salts, A., 319.
 - in dental enamel, A., 377.
 - in duralumin, spectroscopically, A., 317; B., 361.
 - in glass, B., 591.
 - in grape musts and wines, B., 744.
 - in leather, volumetrically, B., 1058.
 - in liver and stomach preparations, A., 514.
 - in ores and silicates, by potassium dichromate method, B., 853.
 - in presence of its oxides, A., 720.
 - in serum, A., 1393.
 - in silicate refractories, B., 949.
 - in presence of titanium, A., 720.
 - determination in, of carbon with electric tube furnace, B., 29.
 - of oxygen, B., 995.
 - of phosphorus, B., 64.
 - of sulphur, potentiometrically, B., 26.
 - of titanium, B., 410.
 - of vanadium, volumetrically, B., 594.
 - separation of, from alkaline-earth metals, A., 1216.
 - from cobalt, A., 838.
 - from indium with cupferron, A., 319.
 - α -Iron, twinning in, A., 811, 922.**
 - effect of nitrogen and carbon on age-hardening of, B., 151.
 - lattice parameter alteration of, on charging with hydrogen, A., 570.
 - Iron articles, production of, (P.), B., 1147.**
 - annealing and cleaning of, (P.), B., 1098.
 - case-hardening of, (P.), B., 637.
 - coating of, with metals, (P.), B., 998.
 - with rubber, (P.), B., 1052.
 - chromium-plating of interior of, B., 729.
 - galvanisation of, (P.), B., 504.
 - pickling of, (P.), B., 907.
 - ceramic-coated, (P.), B., 407.
 - phosphate-coated, organic protective coatings on, B., 994.
 - Iron coatings, mould for, (P.), B., 461.**
 - heat-resistance of, B., 593.
 - hot fracture of, B., 25.
 - soundness of, B., 353.
 - Iron coatings, alloy, B., 151.**
 - composite, production of, (P.), B., 637.
 - ductile, for brake shoes, etc., (P.), B., 105.
 - malleable, B., 904; (P.), B., 956.
 - quenched, self-annealing of, B., 309.
 - silicon, acid-resistant, production of, (P.), B., 1147.
 - Iron minerals, magnetic properties of, A., 1347.**
 - Iron ores, concentration, reduction, and explosion shattering of, B., 103.**
 - separation of, from magnesium ores, (P.), B., 991.
 - physical chemistry of fluxing of, B., 309, 1144.
 - grinding of, in single- and multiple-compartment mills, B., 676.
 - smelting of, (P.), B., 234.
 - prevention of freezing of, B., 498.
 - control of magnetic concentration of, B., 951.
 - reduction of, (P.), B., 234, 906.
 - size preparation of, B., 103.
 - of Bihar and Orissa, A., 602.
 - containing copper and zinc, flotation of, B., 191.
 - Hungarian, containing aluminium, treatment of, B., 1046.
 - Krivorog, direct reduction of, B., 498.
 - lateritic, extraction of nickel from, (P.), B., 1147.
 - Maryville, of Wisconsin, A., 841.
 - oolitic, in Dogger sandstone of Jura Mountains, B., 904.
 - oxide, reduction of, (P.), B., 906.
 - pyritic, treatment of, (P.), B., 1098.
 - in Santorin, A., 727.
 - sedimentary, composition and formation of, A., 1347.
 - of Singhbhum, India, origin of, A., 1347.
 - of Spanish Morocco, origin of, A., 469.
 - spathic, compressed-air roasters for, B., 1144.
 - sulphide, containing copper and zinc, flotation of, at Britannia, B., 770.
 - determination in, of aluminium, B., 63.
 - of arsenic, A., 184.
 - Iron pipes, corrosion of, by Catskill water supply of New York City, B., 27.**
 - for wastes, internal corrosion of, B., 1097.
 - cast, manufacture of, (P.), B., 503.
 - water. See under Water pipes.
 - Iron pyrites. See Pyrites.**
 - Iron rolls, manufacture of, (P.), B., 314.**
 - Iron sheets, galvanisation of, (P.), B., 273.**
 - plating of, (P.), B., 998.
 - electrolytic, magnetic properties of, B., 1050.
 - tinned, analysis of alloy on, B., 1146.
 - Iron tanks, protection of, against corrosion by chlorine, B., 1048.**
 - Iron vessels, enamelled, substitution of, for glass ware, B., 591.**
 - Iron ware, enamelled, testing of, B., 545.**
 - Iron wires, creep of, B., 310.**
 - galvanising of, (P.), B., 910*.
 - passive, electrical activation of, A., 1326.
 - Iron works, potentiometric volumetric analysis in, B., 26.**
 - Irone, synthesis of, A., 979.**
 - synthesis of isomeric of, A., 751.
 - Isabgol. See *Plantago ovata*.**
 - Isatin, reaction of, with 1:3-indanedione, A., 222.**
 - derivatives, A., 758.
 - production of, (P.), B., 444.
 - manufacture of halogeno-derivatives of, (P.), B., 349.

Isatin, manufacture of mercury derivatives of, (P.), B., 206.
Isatins, synthesis of indirubin dyes by condensation of, with 2-methylbenzothiazole, A., 1386.
Isatogens, A., 83, 619, 759, 1133, 1505.
Ishinagi, liver of. See under Liver.
Ishwarene, and its hydrochloride, A., 1433.
Ishwarol, A., 1433.
Ishwarone, and its derivatives, A., 1433.
Isinglass, isoelectric point of, A., 933.
 clarification of liquids with, (P.), B., 963.
Isoelectric point, methods of determination of, A., 933.
Isomerides, X-ray diffraction by, A., 921.
cis-trans, Raman spectra of, A., 429.
 complex, formation of crystal nuclei and lattices of, A., 293.
 isotopic, fractional distillation of, A., 1334.
Isomerism, A., 191, 324.
cis-trans, thermal, kinetics of, A., 452.
 intramolecular, and infra-red absorption spectra, A., 564.
Isopoly-acids, complex salts of, A., 703.
Isoprene, Raman spectrum of, A., 1301.
 reaction of, with sulphur dichloride, A., 325.
 catalytic addition of hydrogen sulphide to, A., 1480.
Isoprenesulphone, A., 604.
Isoprenesulphones, cyclic, isomerism of, A., 326.
Isoteric compounds and ψ -atoms, A., 1132.
Isotherms, exact measurement of, A., 951.
Isotopes, A., 274, 801, 1048, 1440.
 prediction of, A., 804.
 periodic system of, A., 1185.
 regularities in, A., 909.
 systematisation of, A., 1295.
 and nuclear structure, A., 1051.
 separation of mixtures of, by diffusion in streaming mercury vapour, A., 59.
 exchange equilibria of, A., 446.
Isotropic solids, transparent, elastic constants of, A., 1312.
Itaconic acid, *p*-nitrobenzyl ester, A., 81.
Itoyo fish oil, composition of, B., 912.
Ivory, vegetable, autohydrolysis of, A., 1042.
Ivy, poison, toxic principle of, A., 246.

J.

Jaborandi, alkaloids from leaves of, A., 872.
Jalap, solvents for extraction of, B., 1068.
Jalap resins. See under Resins.
Jam, preservation of fruit for, with sulphur dioxide, B., 826.
 manufacture of, B., 172.
 microscopy of, B., 378.
 formol number of, B., 747.
 determination in, of sucrose, B., 204.
Jarosite, in tuff from Postosi, Bolivia, A., 726.
 lead and silver, floatability of, B., 953.
Jasmone, synthesis of, A., 750.
Jatrochiza palmata. See Calumba root.
Jatrochizinium iodide, preparation of, from calumba root, A., 99.
Jaundice, use of galactose in diagnosis of, A., 516.
 phosphatase in blood-serum in, A., 887.
 hæmolytic, porphyrins in fæces in, A., 887.
 obstructive, phosphatase in, A., 516.
 progressive obstructive, blood in, A., 384.

Jejunum, production of enzymes in, A., 400.
Jellies, manufacture of, (P.), B., 477.
 testing of, B., 826.
 fruit, determination of jellying power of fruit juices for, B., 251.
 table, manufacture of, (P.), B., 123, 1163.
 production of concentrated tablets of, (P.), B., 973.
Johannite, specific heat of, A., 690.
 from Colorado and Joachimsthal, A., 843.
Joints, sealing material for, (P.), B., 290.
 composition for gaskets in, (P.), B., 111.
 expansion, filling materials for, (P.), B., 1077.
 gas-tight rotating, for waste-heat recovery apparatus, (P.), B., 578.
Juniperus communis, Latvian, oil from needles of, B., 1023.
Juniperus occidentalis, leaf oil of, B., 1068.
Jute, absorption of moisture by, B., 586.
 use of rags of, in copying papers, B., 489.
 raw, moisture in yarns and, B., 666.
Jute fibres, tensile strength of, B., 488.
Jute lignin. See under Lignin.

K.

Kadsura japonica, polysaccharide in, B., 569.
Kahn reaction, effect of serum-globulin on, A., 109.
Kairin. See *N*-Ethyl-8-hydroxytetrahydroquinoline hydrochloride.
Kala-azar, agranulocytosis of, A., 776.
 antimony therapy in, A., 657.
Kale, composition, digestibility, and nutrient value of, B., 699.
Kanzantiku, constituents of, A., 1434.
Kaoliang, effect of colouring matter and tannin on fermentation of, B., 696.
Kaolin, control by pH in manufacture of, B., 22.
 bleaching of, B., 22.
 rate of drying of, B., 227.
 plastic properties of, A., 1318.
 refractory properties of mixtures of dolomite or magnesite and, B., 22.
 determination of thermal expansion of, B., 177.
 suspensions, absorption of dyes by, A., 819.
 clay, loam, and, B., 565.
 effect of heat treatment on systems of felspar, quartz, and, B., 901.
 reaction of, with sodium chloride, at high temperatures, B., 722.
 action of sodium chloride on alumina, ferric oxide, silica, felspar, salt glaze, and, B., 187.
 thermal behaviour of minerals of, B., 767.
 retention of, by paper, B., 58.
 by-product from, for acid-resistant cement, B., 950.
 use of, in rubber mixes, B., 467.
 production of aluminium chloride from, B., 453.
 American, comparison of, with English china clays, B., 768.
 Georgian, stiff-mud refractories from, B., 992.
 Illinois, petrology of, A., 725.
 Sardinian, mining and refining of, B., 850.
Kaolinite, hydrothermal synthesis of, A., 1333.
 in Illinois coal, A., 725.
 of Saskatchewan, A., 603.

Karasu-uri, acids of seed oil of, A., 960.
Karaya gum, apparent viscosity of aqueous solutions of, B., 1160.
 acidity of solutions of, B., 1160.
Katjangidjoe, black, vitamin- B_1 in, A., 792.
Kauri gum, purification of, B., 1055.
Kelp, treatment of, (P.), B., 973.
 bladder, origin of gases in float of, A., 797.
Kephalin, effect of, on hæmorrhage, A., 244.
 increasing blood coagulation, A., 509.
 from human brain, A., 376.
 electrometric titration of, A., 170.
Keratin, X-ray structure of, A., 1195.
Kerogen, in shale, B., 1028.
Kerosene, refining of, B., 709.
 cracking of, with aluminium chloride, B., 54.
 hydrogenation of, B., 1032.
 solubility of $\beta\beta'$ -dichlorodiethyl sulphide in, B., 261.
 water solubility and boiling ranges of mixtures of alcohol and, B., 133.
 use of alkali sludge from, for de-emulsification of crude oil, B., 1029.
 determination of gum dissolved in, B., 1032.
Kerr constant, and Raman effect, A., 565.
2-Ketacetimido-1-hydroxy-3-methyl-dihydroindene, A., 981.
Keten, and its derivatives, manufacture of, (P.), B., 1085.
 heat of formation and heat of reaction of, with alcohols, A., 36.
 polymerisation and thermal decomposition of, A., 67.
 "Keten diphenyl acetal," structure of, A., 614.
Ketimines, aromatic, hydrolysis of, A., 1371.
Ketimine-enamine compounds, A., 1250.
Ketoacetyloleonic acid, and its methyl ester, A., 865.
*iso*Ketoacetyloleonic acid, and its methyl ester, A., 1127.
 δ -Keto- α -acetyl- δ -phenylvaleric acid, ethyl ester, and its monoxime, A., 622.
Keto-acids, preparation of, A., 215.
 aromatic, nickel salts of, (P.), B., 841.
 α -Keto-acids, reaction of, with α -amino-acids, A., 82.
 unsaturated, hydrogenation of, by fermenting yeast, A., 123.
 additive reactions of, A., 490.
 β -Keto-acids, catalytic decarboxylation of, A., 309.
 aldol condensation of, with aldehydes, A., 981.
 condensation of, with phenols, A., 1503.
3-Keto-acids, manufacture of lactones of, (P.), B., 443.
 α -Ketoaldehydes, reaction of, with periodic acid, A., 1483.
4-Keto-1-allylpiperidine-3:5-dicarboxylic acid, dimethyl ester, and its hydrochloride, A., 630.
 β -Ketoamines, alicyclic, synthesis of, A., 1367.
 γ -Ketoazelaic acid, and its semicarbazone, A., 607.
8:11-Ketobenzanthrone, A., 859.
2-Keto-3-benzylamino-1-benzyl-1:2-dihydroquinoline, A., 1252.
2-Keto-3-benzylamino-1-benzyl-1:2-dihydroquinoline-4-carboxylic acid, and its methyl ester, A., 1252.
2-Keto-3-benzylamino-1:2-dihydroxyquinoline, A., 1252.

- 1-Keto-2-benzyl-1:2-dihydroisoquinoline-3-carboxylic acid, A., 94.
 α -Keto- γ -benzylthiol- γ -phenylbutyric acid, and its oxime, A., 975.
 β -Keto- α -bis-(3-methoxy-4-ethoxyphenyl)- γ -methylvaleramide, A., 485.
3-Ketobisnorcholanic acid, and 4-bromo-, A., 1364.
3-Ketobisnorcholanic acid, 2-bromo-, A., 1364.
 Δ^1 -3-Ketobisnorcholanic acid, A., 1364.
1-Keto-3-(2'-bromo-4'-aminophenyl)-4-methyltetrahydropthalazine, A., 1253.
1-Keto-3-(2'-bromo-4'-nitrophenyl)-2-methyltetrahydropthalazine-4-acetic acid, and its methyl ester, A., 1253.
 β -Ketobutyric acid, derivatives, Raman spectrum of esters of, A., 281, 1054.
d-cis- κ -Ketocamphor, A., 865.
6-Ketocamphor, and its dioxime, A., 755.
 γ -Keto- β -carbethoxy- γ -3-pyridyl-butaldehyde, A., 96.
1-Keto-2-(*cis*-2'-carboxycyclopentyl)-1:2:3:4-tetrahydronaphthalene, A., 1497.
1-Keto-2-(*trans*-2'-carboxycyclopentyl)-1:2:3:4-tetrahydronaphthalene, and its methyl ester, A., 1496.
4-Keto-1- β -chloroethylpiperidine-3:5-dicarboxylic acid, dimethyl ester, and its nitrate, A., 630.
 β -12-Ketocholanic acid, β -3-hydroxy-, and its derivatives, A., 749.
3-Ketocholanic acid, 12-hydroxy-, and its derivatives, A., 749.
6-Ketocholanic acid, 3-hydroxy-, and its acetyl derivative, methyl esters, from pig's bile, A., 773.
3-Keto-4-cyanomethyl-2:3:5:6:7:8-hexahydroisoquinolines, and their methyl derivatives, A., 628.
Ketodecahydrocholanthrene, A., 1117.
trans-2-Ketodecahydronaphthalene, reactions of, A., 492.
trans-2-Ketodecahydronaphthalenes, *mono*- and *di*-chloro-, and 3-hydroxy-, and their oximes, A., 84.
3-Ketodecahydronaphthalene, 2:2-dichloro-, A., 492.
trans-2-Ketodecahydronaphthyl-3-acetic acid, A., 84.
trans-2-Ketodecahydronaphthyl-3-malonic acid, and its diethyl ester, A., 84.
isoKetodiacetylhedragenin, A., 1127.
l-2-Ketodibenzylidenegulonic acid, production of, (P.), B., 606.
2-Keto-3:3-di-(1'3'-diketo-2'-indanyl)-2:3-dihydroindole, and its derivatives, A., 222.
8-Keto-7:7-dihydroxymethylphenylacenaphthenes, and their diacetyl derivatives, A., 86.
 δ -Keto-7:7-di-4'-hydroxynaphthylacenaphthene, and its diacetyl derivative, A., 86.
1-Keto-5:6-dimethoxy-3-(3'4'-dimethoxyphenyl)indene-2-acetic acid, and its semicarbazone, A., 860.
4-Keto-6:7-dimethoxy-1-(3'4'-dimethoxyphenyl)-1:2:3:4-tetrahydronaphthalene-2-carboxylic acid, and its ethyl ester and semicarbazone, A., 861.
4-Keto-3:5-dimethoxy-2:5-diphenylfuran, A., 982.
1-Keto-6:7-dimethoxy-2-phenyl-1:2:3:4-tetrahydronaphthalene, A., 1495.
9-Keto-3:7-dimethyl-6:8-ethylenedipidine-1:5-dicarboxylic acid, dimethyl ester, and its salts, A., 630.
 α' -Keto- α -dimethylglutaric acid, *p*-nitrophenylhydrazones, 2:4-dinitrophenylhydrazones, and phenylsemicarbazone, A., 756.
 α -Keto- $\beta\beta$ -dimethylglutaric acid, and its *p*-*mono*- and 2:4-dinitrophenylhydrazones, A., 489.
 γ -Keto- $\alpha\gamma$ -diphenylbutyranilide, α -hydroxy-, A., 498.
 γ -Keto- $\alpha\gamma$ -diphenylpropane, $\alpha\beta$ -dihydroxy-, A., 346.
5-Keto-1:2:3:4:5:6:7:8:1'2'3'4'-dodecahydro-1:2-benzanthracene, and its derivatives, A., 1117.
9-Keto- $\Delta^{10,11}$ -dodecahydrophenanthrene, A., 1499.
Keto-enols, enolisation of, A., 492.
Keto-enol transformations, kinetics of, A., 939.
5-Ketofructose. See 5-Fructonose.
Ketogenesis, A., 1273, 1531.
effect of diet on, A., 1017.
effect of alkali ingestion on, during inanition, A., 891.
during fasting, A., 891.
physiological, A., 891.
5-Ketogluconic acid, preparation of, A., 732.
Ketogluconic acids, bacterial formation of, A., 1541.
l-2-Ketogulonic acid, and its esters, manufacture of, (P.), B., 606, 1165.
 ψ -Ketohederagenin, diacetyl derivative, and its derivatives, A., 1127.
3-Keto-2:3:5:6:7:8-hexahydroisoquinoline, 4-cyano-, and its derivatives, A., 628.
3-Keto-2:3:5:6:7:8-hexahydroisoquinoline-4-carboxylamide, 1-hydroxy-, A., 1250.
 δ -Keto-*n*-hexane- $\alpha\beta$ -dicarboxylic acid, A., 1106.
Ketohydrophenanthrene derivatives, synthesis of, A., 1498.
Ketolrihydroxybehenic acid, and its oxime, A., 195.
 β -Keto- δ -hydroxy- β -(2:2:6-trimethyl- Δ^6 -cyclohexenyl)- ζ -methyl- Δ^7 -octadiene, and its phenylsemicarbazone, A., 978.
"Ketol," and its dimeride and its methyl ether, A., 734.
Ketols, manufacture of, (P.), B., 1085.
 α -Ketols, electrolytic dissociation of, A., 494.
steric hindrance in oxidation and racemisation of, A., 494.
reaction of, with periodic acid, A., 1483.
Ketomanoxy oxide, and its trihydrochloride and derivatives, A., 496.
2-Keto-10-methoxy-2:3:4:5:6:7:8:14:15:16-decahydrochrysene, A., 1499.
3-Keto-7-methoxy-1:2:3:9:10:11-hexahydro-1:2-cyclopentenophenanthrene, A., 1499.
1-Keto-7-methoxy-1:2:3:4:9:10-hexahydrophenanthrene, and its 2:4-dinitrophenylhydrazones, A., 1499.
10-Keto-3-methoxy-9-methylglucosidone, A., 1382.
3-Keto-7-methoxy-4-methylhydrindenyldeneacetic acid, and its derivatives, A., 343.
5-Keto-8-*m*-methoxyphenylloctic acid, and its methyl ester, A., 1499.
 β -Keto-*c*-methyl-*l*-arabohexonolactone. See *l*-Rhamnoascorbic acid.
1-Keto-6-methyldecalin-4-carboxylic acid, and its ethyl ester and its derivatives, and semicarbazone, A., 756.
3-Keto-6:7-methylenedioxy-2- β -piperonyl-ethyl-1:2:3:4-tetrahydroisoquinoline, A., 875.
3-Ketomethyl-2:3:5:6:7:8-hexahydroisoquinoline-4-carboxylic acids, A., 628.
5-Keto-3-methylpentiophen, and its phenylhydrazones, A., 1377.
5-Ketomethylpentonic acids, condensation of, with mercaptals, A., 497.
4-Keto-1-methylpiperidine-3-carboxylic acid, ethyl and methyl esters, A., 629.
4-Keto-1-methylpiperidine-3:5-dicarboxylic acid, diethyl and dimethyl esters, A., 629.
 α - β -Keto- α -methyl-*n*-propylbenzoic acid, A., 980.
 α -Keto- ζ -methyl- γ -isopropylsuberic acid, and its silver salt, ethyl ester and its derivatives, and methyl ester, A., 755.
1-Keto-5-methyl-1:2:3:4-tetrahydroanthracene, A., 205.
4'-Keto-2'(3')-methyl-1'2'3'4'-tetrahydro-1:2-benzpyrene, A., 968.
2-Keto-3-methyl-1:2:3:4-tetrahydroquinoline, A., 93.
Ketones, electronic structure of, A., 1306.
formation of, in fats, B., 416.
with sodamide, A., 765.
preparation of, from carboxylic acids and anhydrides, A., 214, 215.
kinetics of Friedel-Crafts synthesis of, A., 1207.
manufacture of, (P.), B., 139, 443.
ultra-violet absorption of, A., 1305.
absorption spectra of, A., 82.
surface potentials of, A., 161.
ebullioscopy of, in hydrogen fluoride, A., 820.
vapour pressure of, A., 290.
adsorption of vapours of, by active charcoal, A., 929.
halochromism of, A., 913.
acidity of, A., 569.
aldolisation of, by mixed secondary and tertiary Grignard reagents, A., 1112.
rate of alkaline chlorination of, A., 1353.
reduction of mixtures of, with nitrites, A., 328.
electrolytic reduction of, in glacial acetic acid, A., 1224.
condensation of, A., 846.
with formaldehyde, A., 622.
condensation products of amines and, (P.), B., 841.
extinction of reactivity of, A., 621.
saturation of affinity of oxygen in molecular compounds of, A., 429.
cyclic ethers of pyrocatechol with, A., 339.
solvents from, B., 714.
alicyclic, viscosities of, A., 925.
oxidation of, to acids, (P.), B., 348.
reaction of, with diarylthiocarbamides, A., 628.
aliphatic, photo-dissociation of, A., 48, 1211.
reduction of, to hydrocarbons, A., 1224.
action of phosphorus pentasulphide on, A., 1107.
reaction of, with metallic sodium, A., 329.
preparation of *N*-substituted imines of, A., 336.
simple, dicyclic derivatives of, A., 1107.
aromatic, hydrolytic fission of, by acids, A., 1242.
colour changes in cyclisation of, A., 621.
five-ring, deep-coloured, A., 216, 1241.
cyclic, A., 345.
manufacture of, (P.), B., 1133.
photochemical decomposition of, A., 713.
condensation reactions of, A., 758.
artificial resins from aldehydes and, (P.), B., 1154.
polynuclear, manufacture of, (P.), B., 1133.
ethylenic, A., 476.

- Ketones**, α -ethylenic, aliphatic, action of Grignard reagents on, A., 847.
 higher, production of, B., 1036.
 hindered, action of hypiodite on, A., 979.
 saturated, from condensation of pyrylium derivatives, A., 1376.
 unsaturated, hydrogenation of, by fermenting yeast, A., 1367.
 $\alpha\beta$ -unsaturated, autoxidation of, A., 979.
 condensation of, with simple ketones, A., 981.
 identification of, with *p*-nitrobenzhydrazide, A., 1259.
 with *o*-tolylsemicarbazide, A., 1259.
 detection of, by salicylaldehyde reaction, B., 839.
 determination of, A., 1147.
 by means of hydroxylamine and pyridine, A., 370.
 in urine, A., 1268.
 determination of water in mixtures of alcohols and, B., 839.
- 9-Keto-10-nitromethyl-9:10-dihydrophenanthrene**, 10-hydroxy-, A., 347.
- Ketonitrophenyltriazidines**, imino-, platinichlorides, A., 225.
- 3-Ketonorcholanic acid**, and its methyl ester and semicarbazone, A., 1495.
- Ketonurine**, bactericidal action of, A., 1421.
- λ -Keto-octadecanitrile**, A., 474.
- trans-2-Keto- Δ^1 -octahydronaphthalene**, and its oxime, A., 84.
- 1-Keto-3-phenyl-2-*p*-anisyl-1:3-dihydroisindole**, A., 1370.
- γ -Keto- α -phenyl- γ -*p*-bromophenylbutyr-anilide**, α -hydroxy-, and its phenylhydrazone, A., 498.
- 8-Keto-8-phenyl-*n*-butyl alcohol**, A., 980.
- 8-Keto-8-phenyl-*n*-butyl bromide**, A., 980.
- 2-Keto-4-phenyldecalin**, and its 2:4-dinitrophenylhydrazones, A., 1499.
- 1-Keto-3-phenyl-2-*p*-dimethylaminophenyl-1:3-dihydroisindole**, and its hydrogen sulphate, A., 1370.
- 4-Keto-1- β -phenylthylpiperidine-3:5-dicarboxylic acid**, dimethyl ester, and its hydrobromide, A., 630.
- β -Keto- α -phenyl- γ -mesitylpropane**, and its oxime and its benzoate, A., 979.
- 3-Keto-1-phenyl-11-methyl-2:3:4:9:10:11-hexahydrophenanthrene**, A., 1499.
- 5-Keto-2-phenyl-4-(2'-nitro-5'-acetoxybenzylidene)-4:5-dihydro-oxazole**, A., 1385.
- 5-Keto-2-phenyl-4-(2'-nitro-5'-benzyloxybenzylidene)-4:5-dihydro-oxazole**, A., 1385.
- 5-Keto-2-phenyl-4-(2'-nitro-5'-methoxybenzylidene)-4:5-dihydro-oxazole**, A., 1385.
- β -Keto- β -phenyl- α -2:4-dinitrophenylethane sulphate**, α -amino-, A., 345.
- 2-Keto-4-phenyl- Δ^1 -octalin**, A., 1499.
- β -Keto-8-phenyl- Δ^7 -*n*-pentenoic acid**, A., 981.
- γ -Keto- γ -phenylpropaldehyde carbomethoxyhydrazones**, A., 1380.
- Ketopinic acid**, β -hydroxycamphor ester, A., 90.
- isoKetopinic acid**, derivatives of, A., 350.
- α -Ketopropaldehyde**, $\beta\gamma$ -dibromo-, tri-bromophenylhydrazones, ω -chloro-, 2:4-dinitrophenylhydrazones, and iodo-, di- and tri-bromo- and *o*-nitro-phenylhydrazones, A., 206.
- $\beta\beta\alpha$ -tribromo-, 3:5-dichloro-2:4-dibromo-phenylhydrazones**, A., 1231.
- 2-Keto-*l*-ribohexose**. See *l*-Psicose.
- 8-Ketosebacic acid**, synthesis of α -hydrinden-4-one from, A., 215.
- Ketoses**, A., 735, 1484.
 isorotation of, A., 1484.
- Ketosis**, A., 522, 891.
- λ -Ketostearic acid**. See Ricinoleic acid.
- Ketosulphidocarboxylic acids**, fission of, A., 1237.
- Ketosulphones**, $\alpha\beta$ -unsaturated, A., 1241.
- β -Keto-8-teresanilylbutylmalonic acid**, and its semicarbazone, A., 755.
- γ -Keto- ϵ -teresanilylhexoic acid**, and its methyl ester, semicarbazone, and phenylsemicarbazone, A., 755.
- 1-Keto-1:2:3:4-tetrahydrocarbazole**, compounds of, with polynitro-hydrocarbons, and its derivatives, A., 1132.
- 1-Ketotetrahydronaphthalene**, 2-amino-, and its hydrochloride, (P.), B., 796.
- $\beta\beta$ -dibromo-**, A., 987.
- 1-Keto-2-tetrahydronaphthylpyridinium bromide**, and its derivatives, A., 987.
- 4-Ketotetrahydrothiazole**, 2-imino-, and its aryl derivatives, synthesis of, A., 364.
- 3-Keto-3:4:5:6-tetrahydrothionaphthen**, A., 1378.
- 9-Keto-3:6:7:8-tetramethyldipidine-1:5-dicarboxylic acid**, dimethyl ester, and its salts, A., 629.
- γ -Keto- γ -1-thienyl-*n*-butyric acid**, A., 1377.
- 4-Keto-2-thioketo-3:4-dihydro-1:3-benzoxazine**. See Thiocarbonylsalicylamide.
- α -Keto- γ -*p*-tolylthiol- γ -phenylbutyric acid**, and its oxime, A., 975.
- 9-Keto-6:7:8-trimethyl-3-allyldipidine-1:5-dicarboxylic acid**, dimethyl ester, A., 630.
- 9-Keto-6:7:8-trimethyl-3- β -chloroethyl-dipidine-1:5-dicarboxylic acid**, dimethyl ester, and its nitrate, A., 630.
- 2-Keto-1:6:7-trimethyl-1:2-dihydroquin-oxaline**, A., 94.
- 2-Keto-1:6:7-trimethyl-1:2-dihydroquin-oxalina-3-carboxylic acid**, A., 94.
- ϵ -Keto- γ -2:6:6- Δ^1 -trimethylcyclohexenyl- Δ^4 -hexinene**, A., 492.
- γ -Keto- α -2:6:6- Δ^1 -trimethylcyclohexenyl- Δ^4 -octadiene**, and its semicarbazone, A., 492.
- γ -Keto- α -2:6:6-trimethylcyclohexyl- γ -methyl- Δ^7 -octene**, and its semicarbazone, A., 492.
- 4-Keto-2:2:3-trimethylcyclopentane-1-acetic acids**, and their derivatives, A., 755.
- 9-Keto-6:7:8-trimethyl-3- β -phenylethyl-dipidine-1:5-dicarboxylic acid**, dimethyl ester, A., 630.
- 1'-Keto-1:3:3-triphenyl-2:2'-di-indenyl**, 1-hydroxy-, A., 1492.
- 3-Ketotropan-2:4-dicarboxylic acid**, dimethyl ester, and its hydrochloride, A., 630.
- Ketoximes**, rearrangement of hydrochlorides of, A., 1498.
 acylated, action of alkali on, A., 1125.
- Ketyls**, metallic, structure of, A., 84, 345.
 formation of, by dissociation of alkali metal pinacولات, A., 84.
 reaction of, with alkyl halides, A., 345.
- Kidneys**, ultra-filtration in glomeruli of, A., 380.
 biochemical differences between cortex and medulla of, A., 777.
 secretion of dyes by, A., 1003.
 effect of sodium chloride solutions on elimination of dyes by, A., 1148.
 effect of adrenal cortex on activity of, A., 258.
 water economy in excretion by, in relation to urea, A., 106.
 antiglyoxalase action of preparations of, A., 784.
- Kidneys**, differentiation of bromides and chlorides by, A., 1007.
 control of carbohydrate metabolism by, A., 241.
 water-soluble chlorine precursor in, A., 1265.
 gas metabolism of, A., 387.
 anaerobic glycolysis in, A., 251.
 phosphate excretion by, A., 1267.
 as site of thyroid action, A., 790.
 effect of restricting or suppressing function of, A., 518.
 suppression of function of, A., 1261.
 phenolsulphonophthalein test of function of, A., 518.
 sugar threshold and renal function in, A., 111.
 chloride and urea in urine as test of function of, A., 518.
 urea ratio as measure of function of, A., 641.
 ionic changes and urea in diseases of, A., 1402.
 cat's, lipins in, A., 376.
 denervated, A., 245.
 frog's, diffusion equilibria in, A., 1015.
 gaseous metabolism of, A., 890.
 urea content of, A., 376.
 human, effect of parathyroid extracts on, A., 900.
 pig's, phosphatase of, A., 534.
 rabbit's, excretion of glucose by, A., 1268.
- Kiers**, efficiency of boiling in, B., 625.
- Kieselguhr**, refining of, B., 451.
 adsorption of aluminium hydroxide by, A., 1070.
 filtration with, in sugar industry, B., 75.
- Kilns**, (P.), B., 82, 407.
 work-batch location indicator for, (P.), B., 755.
 trucks for, (P.), B., 1025.
 periodic firing of, B., 270.
 device for introduction of cement slurry, etc., into, (P.), B., 271.
 efficiency of, B., 724.
 effects of combustion methods on temperature uniformity of, B., 724.
 for burning bricks, etc., (P.), B., 102.
 for manufacture of glassware, etc., (P.), B., 385.
 for pottery, (P.), B., 49.
 for drying of wood, (P.), B., 951, 1097.
 cement, slurry rings in, B., 1044.
 rotary, gas volumes and velocities in, B., 903.
 heat and material balances in, B., 591.
 ceramic, firing of, B., 270.
 main flues and stacks for, B., 355.
 control of atmosphere in, B., 851.
 drying, for grain, etc., (P.), B., 1116.
 muffle-, firing of, B., 270.
 rotary, (P.), B., 129, 1025.
 waste-gas temperatures of, B., 81.
 internally-fired, (P.), B., 2.
 shaft, (P.), B., 337.
 tunnel, (P.), B., 2, 101, 337, 454, 1095.
- Kinematograph films**, colour, production of, (P.), B., 702, 1024.
 incised, (P.), B., 255.
 sound, production of, (P.), B., 751.
 records for, (P.), B., 925.
- Kinematography**, (P.), B., 255.
 projection of images in natural colours in, (P.), B., 175.
 fireproof screen for, (P.), B., 175.
 colour, apparatus for, (P.), B., 47.
 projection printing in, (P.), B., 207.
- Kinetics**, chemical, primary molecular interaction in, A., 1326.

Kinetic theory of gases, A., 1197.
of molecules, and its relation to heat phenomena, A., 437.
Kinochromatins, A., 376.
Kirschwasser. See **Cherry water**.
Kleinia, citrates in species of, A., 1550.
Kneading apparatus, (P.), B., 3.
Kneading machines, (P.), B., 386, 1075.
Knoevenagel reaction, A., 81.
Kogasin, constitution of lubricating oils from, B., 889.
Kolbe's reaction, mechanism of, A., 45.
"Kontakt," B., 1030.
Koroseal, properties and uses of, B., 735.
Krypton, isotopes, A., 6.
cross-section of, for slow electrons, A., 908.
occurrence of, in air, A., 468.
manufacture of, from air, (P.), B., 900.
recovery of, from air, (P.), B., 227.
Zecman splitting in spectrum of, A., 423.
absorption spectrum of, A., 271.
molecular refraction of, A., 13.
ionisation potential and formation of multiply-charged ions in, A., 4.
elastic scattering of electrons in, A., 557, 1185.
vapour pressure of, A., 1313.
solid, vapour pressure of, A., 1064.
solubility of, in liquid oxygen, A., 25.
compounds of hydrochloric acid and, A., 35.
determination of, in air, A., 463.
Kümmel liqueur, turbidity of, B., 77.
Kumanokogi, fatty substances of, A., 772.
Kumiss, microbiology of production of, B., 1017.
Kuromame, colouring matter of, A., 1041.
Kuromamin, A., 1041.
Kyanite, effect of repeated firing on, B., 768.
in hornfels of granite in Ross-shire, A., 956.

L.

Labiata, marrubiin in, A., 268.
Laboratory apparatus, risks from use of mercury in, B., 479.
glass, cleaning of, A., 466.
Labour, ketone content of blood in, A., 385.
Lac, physical properties of, B., 914, 1004.
identification and analysis of, B., 734.
Lao resin, constitution of, B., 465.
isolation of, B., 417.
Laccase, A., 400.
Laccoliths, peridotitic, in Newfoundland, A., 726.
Lachnophyllum gossypinum, oil from, B., 333.
Lacmoid, use of, as substitute for litmus, B., 828.
Lacquers, (P.), B., 736.
production of, B., 319; (P.), B., 33, 466, 961.
filtration of, B., 366.
resistance of, to air in relation to composition, B., 33.
materials for, B., 160.
alkyd resins for, (P.), B., 278.
uses of hexanone in, B., 91.
polishes for, (P.), B., 407.
influence of pigments in rubber and, B., 510.
use of triethanolamine in, B., 1151.
use of oxidised turpentine in, B., 31.
use of polymerised vinyl compounds as bases for, B., 642.
solvents for, B., 598, 1151.

Lacquers, solvents for, apparatus for comparison of rates of evaporation of, B., 860.
thinners for, B., 598.
alcohol as substitute for benzine and benzol for dilution of, B., 1102.
amyl propionate as solvent for, B., 913.
effect of plasticisers on durability of, B., 913.
films, influence of plasticisers on, B., 1004.
determination of strength of, B., 319.
developments in, B., 1151.
manufacture of azo-dyes for pigments for, (P.), B., 1086.
production of resins for, from proteins, B., 1151.
coating of rubber, etc., with, (P.), B., 278.
application of graphite, etc., to coatings of, (P.), B., 34.
production of mother-of-pearl effects in, (P.), B., 511.
for plaster, etc., (P.), B., 367.
air-conditioning in rooms for application of, B., 1103.
benzylcellulose, B., 860.
solvents for, B., 265.
bituminous, (P.), B., 775.
bronzing, B., 1055.
cellulose, B., 160, 465, 510.
plasticisers for, (P.), B., 914.
pigmented, selection of, B., 109.
cellulose acetate, B., 598.
cellulose ester, defects of pigments in, B., 239.
cellulose ester and ether, manufacture of, (P.), B., 1056.
chlorinated rubber, binding agent for, (P.), B., 1056.
clear and pigmented, poor flow in, B., 734.
coloured, manufacture of, (P.), B., 367.
from cellulose esters, (P.), B., 240.
nitrocellulose, production of, (P.), B., 320.
formula yields in, B., 815.
plasticisers for, B., 510.
effect of butyl alcohol on viscosity of, B., 598.
use of semi-drying oils in, B., 510.
light-filtering coating for films of, (P.), B., 830.
protective coating for, (P.), B., 599.
durability of films of, B., 319.
overcoating for films of, (P.), B., 278.
pitting of films of, B., 598.
black, (P.), B., 1103.
resistant to alcoholic liquors, B., 465.
spraying, for railway-carriages, etc., B., 465.
testing of, B., 598.
testing and control of, B., 194.
determination in, of urushiol, A., 1502; B., 734, 960.
Lactacidæmia, A., 372.
Lactacidogen, formation of, from aqueous brain extracts, A., 1531.
influence of yellow respiratory enzyme on dehydrogenation of, by yeast-dehydrogenase, A., 1161.
Lactalbunin, titration curves and buffering power of, and its non-identity with serum-albumin, A., 234.
Lactaldehyde diethylacetal, A., 733.
Lactaldehyde, amino-, diethylacetal, hydroxylamino-, diethylacetal oxalate, and nitro-, and its derivatives, A., 1353.
r-Lactaldehyde, resolution of, A., 608.
dl-Lactaldehyde, phytochemical reduction of, A., 1165.

Lactaria, imitation truffle preparations from, • B., 826.
Lactarius deliciosus, pigments of, A., 495.
Lactarovioline, and its hydrochloride, A., 495.
Lactase, intestinal, activity of, A., 783.
Lactation, A., 1523.
inhibition of, A., 542.
Lactic acid, formation of, by action of barium hydroxide on monobasic sugar acids, A., 327.
production of, by fermentation of barley, B., 872.
auto-esterification of, A., 1328.
salts, oxidation-reduction potential of, with enzyme and pyruvate, A., 121.
phenylmercuric and *p*-tolylmercuric salts, A., 997.
potassium salt, expansion of films of myosin on solutions of, A., 1201.
sec.-butyl ester, production of, (P.), B., 262.
isobutylidene and *propylidene* esters, A., 731.
formation of, from *d*-alanine in stomach, A., 1152.
in aqueous brain extracts, A., 1531.
in limbs during rest and exercise, A., 775.
in dog's muscle, A., 110.
in tumours, A., 1526.
hepatofugal and hepatopetal formation of, in the organism, A., 240.
formation and removal of, during starvation and oxidation of sugars, A., 522.
effect of respiration on synthesis of, in nephrectomy, A., 520.
in beer, B., 650.
in blood and liver, A., 892.
in blood and urine, in administration of fructose, A., 1017.
during injection of glucose, A., 778.
in cartilage, A., 1264.
in heart metabolism, A., 1017.
oxidation of, in avitaminosis-B, A., 130.
in brain, A., 251, 653.
degradation of, by enzymes of yeast, A., 661.
formation of gels in sera by addition of, A., 508.
cultures of *Bacillus xylinum* in, A., 255.
removal of, in lungs in physical work, A., 1409.
detection of, in milk and cream, B., 475.
determination of, A., 327, 554.
apparatus for, A., 473.
colorimetrically, A., 270.
by method of French Pharmacopœia, B., 1117.
in blood, A., 104.
in mammalian brain, A., 1264.
in presence of methylglyoxal, A., 102.
in muscle, A., 232.
determination in, of formic acid, B., 1084.
l(+)-Lactic acid, ethyl ester, A., 850.
Lactobacillus acidophilus, propagation of, (P.), B., 974.
concentrates of, (P.), B., 287.
acid production by, A., 1282.
therapeutic products from, (P.), B., 654.
Lactobacillus bifidus, A., 255.
Lactobionic acid, calcium salt, production of, (P.), B., 939.
Lactobiose, reactions of, A., 1109.
Lactoflavin, preparation of, and its growth effect, A., 544.
synthesis of stereoisomerides of, A., 1134.
synthesis of substances resembling, A., 94, 224.

- Lactoflavin**, optical activity of, A., 359, 1521.
 fluorescence curves of, A., 1134.
 irradiation of, A., 224, 1277.
 identity of, with vitamin-B₂, A., 545.
di-hydrogen phosphate, A., 545.
 differentiation of, from rat anti-pellagra factor, A., 545.
 enzymic esterification of, with phosphoric acid, A., 1035.
 from algae, A., 1040.
 from hay, A., 415.
 in micro-organisms, A., 663.
 See also Vitamin-B₂.
- 1-Lactomercuri-2-methoxycyclohexane**, A., 1515.
- Lactometers**, B., 426.
 direct-reading, B., 746.
- Lactones**, formation of, from monobasic sugar acids, A., 196.
 Müller's. See Müller's lactone.
 with musk and amber odours, preparation of, A., 960.
- Lactose**, synthesis of, by mammary glands, A., 1151.
 physico-chemical properties of, A., 200, 330.
 influence of salts and acids on mutarotation velocity of, A., 200.
 influence of glycerol and of neutral salts on equilibrium rotation of, A., 330.
 solubility of, in salt solutions, A., 577.
 effect of heat on colour of solutions of, B., 571.
 effect of, on growth and longevity, A., 1272.
 nutritive value of, A., 240.
 determination of, microchemically, A., 639.
 in mixed feeding-stuffs, B., 522.
 in milk, A., 1147.
 in cow's milk, A., 773.
 in urine, A., 1402.
- β -Lactose**, production of, (P.), B., 329, 649.
- neoLaetose β -heptaacetate**, A., 1355.
- Lacustrine** of Karelian A.S.S.R., A., 1346.
- Lævulaldehyde di-(*m*-nitrobenzhydrazide) and di-(2:4-dinitrophenylhydrazones)**, A., 743.
- Lævulinic acid**, formation of, from hexoses, A., 607.
 esters, manufacture of condensation products of trihalogeno-esters of fatty acids and, (P.), B., 1130.
 alkyl esters, preparation of, from carbohydrates, A., 497.
n-butyl and isopropyl esters, semicarbazones of, A., 497.
 and its esters, *m*-nitrobenzhydrazides and 2:4-dinitrophenylhydrazones of, A., 743.
 and its benzyl and ethyl esters, *o*-tolyl-semicarbazones, A., 1259.
- Lævulose**, production of, as calcium salt, (P.), B., 871.
 determination of, in port and sweet wines, B., 871.
- Lakes**, inland, particulate and dissolved organic matter in, A., 468.
 Japanese, abnormal temperature stratification in, A., 322.
 Minnesota, soil and water from, A., 841.
 feeding value of vegetation of, B., 172.
 salt, recovery of potassium sulphate from, B., 543.
 at Larnaca, A., 602.
 of the Volga delta, A., 600.
- Lakes**, colour, manufacture of, (P.), B., 1152.
 fastness of, to light, B., 366.
- Lakes**, colour, fastness to light of pigments for, B., 366.
 standardisation of, (P.), B., 941.
 tungstate and molybdate, B., 684.
- Lamellibranchs**, catalase and oxidation in, A., 400.
- Laminaria**, effect of orange juice on growth of gametophytes of, A., 905.
- Lamps**, electric. See Electric lamps.
 Nernst, action of, A., 560.
- Lamp black**, X-ray structure of, A., 285.
 degree of dispersion of, B., 791.
- Lampreys**, brook-, proteolytic digestion in larvæ of, A., 1163.
- Lanadigin**, potency of, A., 1158.
 poisoning by. See under Poisoning.
- Langbeinite**, treatment of, B., 145.
 rate of solution of, B., 145.
- Lanthanum**, hyperfine structure and nuclear magnetic moment of, A., 676.
- Lanthanum alloys** with magnesium, crystal structure of, A., 151.
 with thallium, crystal structure of, A., 433.
- Lanthanum salts**, specific heat of, A., 289.
 complex, A., 714.
- Lanthanum chloride**, density of aqueous solutions of, A., 1201.
 nitrates, solubilities of, in water, A., 928.
 oxide, spectroscopic determination of, A., 318.
 cubic, A., 686.
- Larch**, European, water-soluble polysaccharide from, A., 478.
- Lard**, production of, B., 275.
 autoxidation of, B., 275.
 nutritive value of fatty acids of, and their esters, A., 523.
 influence of feeding with meat, bone meal, and linsed cake on, B., 972.
 relation of constants of, to its culinary value, B., 1161.
 inhibition of rancidity of, by cereals and seeds, B., 683.
 Hungarian, B., 416.
 detection in, of hardened oils, tallow, and palm oils, B., 364.
- Larus *nidibundus***, changes in blood of, during growth, A., 372.
- Larvicides**, action of Paris-green as, B., 528.
- Latex**, plant, surface composition of, A., 1180.
- Lathyrism**, toxic substance causing, A., 117.
- Lathyrus**, toxic substance in, A., 117.
- Lathyrus sativus**, globulins of, A., 268.
- Laudanum**, Sydenham's, determination in, of morphine, B., 477.
- Laundries**, drying apparatus for, (P.), B., 627.
 drying machines for, (P.), B., 99.
- Laur-*n*-amylamide**, A., 70.
- Laurdiethylamide**, A., 71.
- Laurcyclohexylamide**, A., 70.
- Lauric acid**, sodium salt, adsorption of, by barium sulphate, A., 1069.
 arginine and lysine esters, A., 966.
 β -*n*-butoxyethyl, γ -butylene, $\alpha\beta$ -propylene, and tetramethylene esters, A., 730.
- Lauric -mono- and -di-nitrophenylcarbamic anhydrides**, A., 336.
- Laurionite**, A., 842.
- Laur-3:5-dinitroanilide**, A., 336.
- α -Laur- β -*γ*-diundecoin**, fission of, A., 1273.
- Laur- β -phenylethylamide**, A., 70.
- n*-Laurylsulphonic acid**, sodium salt, A., 606.
- Lava**, differentiation in flows of, A., 955.
 basalt, from Co. Antrim, A., 725.
 Californian, radium content of, A., 726.
 Hawaiian, differentiation of, A., 956.
- Lava round hot springs** in Lassen National Park, California, A., 842.
- Lavender oil**, from Savona, B., 45.
- Lavrovite**, A., 1100.
- Law of combining volumes**, lecture demonstration of, A., 467.
- Lawns**, fertilisers for, B., 117.
- Laxatives**, production of, (P.), B., 924.
- Leaching**, countercurrent, (P.), B., 51.
 counterflow, (P.), B., 387.
- Lead**, atomic factors of, A., 908.
 isotopes of, A., 149, 1295.
 and its alloys, preparation of, for microscopical examination, B., 636.
 electrochemical extraction of, from ores, B., 312.
 treatment of, after extrusion, (P.), B., 956.
 recovery of, from battery scrap, etc., (P.), B., 1000.
 purification of, by Harris process, B., 28.
 and its alloys, (P.), B., 1000.
 and its alloys with tin, (P.), B., 680.
 refining of, (P.), B., 155, 156, 596.
 removal of bismuth from, (P.), B., 156.
 temperature-viscosity relations of slags of, B., 551.
 drosses from blast furnaces for, B., 312.
 smelting in blast furnaces for, B., 412.
 smelting of zinciferous ores in blast furnaces for, B., 500.
 production of zinc from fumes from Trail blast-furnaces for, B., 771.
 baths of, for hardening and tempering, B., 551.
 softening of, (P.), B., 362.
 influence of impurities on properties of, B., 458.
 effect of heat treatment on mechanical properties of, B., 458.
 elasticity of, A., 599.
 effect of interrupted straining on elongation of, B., 954.
 shearing strength of, B., 153.
 effect of antimony on tensile strength of tubes of, B., 500.
 spectrum of, A., 272, 424, 676, 1046, 1292.
 isotope effect in, A., 138.
 absorption and emission band spectra of, A., 1292.
 arc spectrum of, A., 138.
 L X-ray spectrum of, A., 676.
 L-series spectrum of, A., 1439.
 first spark spectrum of, A., 272.
 penetrating rays in, A., 804.
 scattering of neutrons by, A., 1296.
 electrodeposition of, from perchloric acid solution, B., 906.
 electrical resistance of, at low temperatures, A., 154.
 and its alloys, electrochemical behaviour of, in storage batteries, B., 1001.
 superconductivity of, A., 20.
 isoelectric sequence in, A., 2.
 magnetic induction in superconducting crystals of, A., 287.
 vapour pressure of, measured by Baur and Brunner's method, A., 1454.
 vapour, resonance spectrum of, A., 3.
 artificial activation of, by γ -rays, A., 7.
 absorption of cosmic rays by, A., 278, 804.
 diffusion of gold in, A., 158.
 miscibility of liquid copper, lead, and iron sulphides with, A., 292.
 influence of silver on rate of recrystallisation of, B., 458.
 corrosion of, in the chamber process, B., 722.

Lead, corrosion of, in calcium chlorate solutions, B., 410.
 by nitrosylsulphuric acid, B., 722.
 prevention of, in buildings, B., 807.
 electrolytic dissolving of, by double diaphragm counterflow method, B., 808.
 solubility of, in mercury, A., 928.
 coating with, of iron, (P.), B., 314.
 of electric cables, B., 107.
 thickness of oxide films on, A., 918.
 use of, in building, B., 1098.
 removal of, from zinc ores, (P.), B., 1098.
 jointing of metals with, A., 952.
 poisoning by. See under Poisoning.
 biochemistry of, in blood, A., 781.
 content of, in human tissues and excreta, A., 1160.
 from Great Bear Lake, isotopes in, A., 1100.
 electrolytic, micro-crystalline arrangement in, A., 1330.
 finely-divided, production of, (P.), B., 235.
 oxidised, vanadium, molybdenum, tungsten, and chromium in deposits of, A., 60.
 radiogenic, at. wt. of, A., 558.
 superconducting, magnetisation of, A., 1309.
 zinciferous, refining of, (P.), B., 66.
Lead alloys, age-hardening of, B., 500.
 molten, surface tension of, B., 459.
 use of, in drainage and water pipes, B., 1024.
 with alkaline-earth metals, production of, (P.), B., 236.
 with antimony and calcium, electrochemical behaviour of, in storage batteries, B., 1001.
 with arsenic, A., 1314.
 with bismuth, superconducting, A., 816.
 with bismuth and thallium, A., 576.
 with calcium, production of, (P.), B., 107.
 with copper, A., 23.
 X-ray structure of, A., 1065.
 centrifugal casting of, (P.), B., 193.
 with copper and sulphur, action of hydrogen sulphide on, B., 500.
 with gold, crystal structure of, A., 920.
 with lithium, A., 23.
 with praseodymium, A., 152.
 with thallium, penetration of magnetic fields into, A., 287.
 with tin, quantitative spectrum analysis of, A., 463.
 with zinc, A., 158.
Lead compounds, of perovskite structure, A., 433.
 used in therapy of tumours, A., 1021.
Lead arsenate, removal of spray residues of, from fruit, B., 247.
 analysis of, B., 628.
 azide, manufacture of, B., 334.
 borophosphate, A., 832.
 bromide and chloride, orientation of, by muscovite mica, A., 570.
 double salts of, A., 592.
 carbonate, manufacture of, (P.), B., 270.
 chloride, activity of, in alkali chloride solutions, A., 582.
 equilibrium of, with mercuric chloride, A., 1204.
 chlorites, basic and double, A., 1213.
 chromate, photo-electric conductivity of, A., 566.
 crystal structure of, in cellulose, A., 686.
 influence of agar acidity on Liesegang rings of, A., 580.

Lead chromate, action of hydrogen sulphide on, A., 1470.
 use of, as anti-rust pigments, B., 913.
 basic, A., 592.
 halides, absorption spectra of vapours of, A., 562.
 alkali halides, complex, formation of, A., 317.
 iodide, influence of agar acidity on Liesegang rings of, A., 580.
 equilibrium of, with lead oxide, A., 703.
 compounds from dehydration of compound of potassium iodide and, A., 460.
 nitrate, use of, in precipitation-titration of anions, A., 948.
 precipitation with, in titrimetric analysis, A., 1472.
 suboxide, production of, (P.), B., 900.
 monoxide, production of, (P.), B., 235.
 by electrolysis, B., 1043.
 micrograph of, B., 723.
 absorption spectrum of, A., 562.
 magnetic properties of mixtures of chromic oxide and, A., 440.
 magnetic properties of mixtures of, with ferric oxide, A., 158.
 η_H of solutions of, A., 1203.
 equilibrium of, with lead iodide, A., 703.
 rates of oxidation of litharge and massicot forms of, A., 710.
 crystalline, preparation of, in aqueous media, B., 808.
 dioxide, conversion of, into the monoxide, A., 1338.
 oxides, effect of grinding and compression on specific weights and colour of, B., 225.
 oxyhalides, A., 833.
 sulphate, solubility of, in water and sulphuric acids solutions, A., 159.
 precipitation of, A., 317.
 precipitated, ageing of, A., 715.
 sulphate and potassium sulphate, equilibrium of, with potassium, sulphate, and iodide ions, A., 583.
 sulphide, absorption spectrum of, A., 280.
 electrical behaviour of rectifying layer of, A., 1055.
 miscibility of, with molten lead, A., 292.
 films of, on lead nitrate solutions, A., 442.
 crystallised, electrical properties of aggregates of, A., 1303.
 action of, on animals, A., 399.
 thioarsenites, A., 601.
Lead organic compounds, reaction of, with phenylarsine, A., 997.
 replacement of lead in, by mercury, A., 506.
Lead acetatobromide, A., 1089.
 acetatochloride, A., 50.
 alkyls, and their physical properties, A., 333.
 manufacture of, (P.), B., 93.
 dimethyl di-sec.-amyl, manufacture of, (P.), B., 93.
 salicylaldehyde, precipitation of, A., 1338.
 tetra-alkyls, manufacture of, (P.), B., 1086.
 purification of, (P.), B., 895.
 tetraethyl, manufacture of, (P.), B., 349.
 lead alloy for manufacture of, (P.), B., 193.
 Raman spectrum of, A., 681.
 photodissociation of, A., 1052, 1468.
 anti-knock effect of, B., 614.

Lead organic compounds:—

Lead tetraethyl, effect of, on pre-flame reactions in engines, B., 888.
 influence of, on reaction of hydrogen and oxygen, A., 42.
 tetraphenyl, absorption spectrum of, A., 563.
Lead detection and determination:—
 detection of, in dusts, B., 526.
 determination of, A., 1094.
 in small amounts, A., 950.
 by chromate method, A., 317.
 as dioxide, A., 1338.
 electrolytically, A., 720.
 by electrolytic-colorimetric method, A., 317.
 gravimetrically, A., 1338.
 micro-electrolytically, A., 722.
 as periodate, A., 55.
 potentiometrically, A., 185.
 with pyridine and potassium iodide, A., 720.
 volumetrically, A., 1473.
 in its alloys with antimony, copper, and tin, B., 272, 501.
 in biological material, A., 247, 531, 1552.
 in copper, B., 636.
 in electrolytic copper, spectrographically, A., 1096.
 in food colouring matters, B., 1021.
 in forensic analysis, A., 1182.
 in lead-coated iron, B., 457.
 in solutions of basic lead acetate, A., 597.
 in presence of mercury, with anthranilic acid, A., 720.
 electrolytically, in ores, B., 955.
 spectrographically, in sardines and preserves, B., 921.
 spectroscopically, in tin, B., 954.
 in tinned foods, B., 747.
 in urine, A., 1525.
 spectroscopically, A., 399.
 in drinking water, B., 432, 527, 752.
 spectroscopically, in zinc oxide, B., 1043.
 and its separation from bismuth, A., 1094.
 and its separation from copper, A., 720.
 determination in, of antimony, B., 808.
 of tellurium, B., 64, 459.
Lead bronze, use of manganese in, B., 856.
Lead bullion, production of, by Betts process, B., 1051.
Lead chromes, light fastness of, B., 561.
Lead ores, chlorination of, B., 412.
 Canadian, treatment of, B., 312.
 oxidised, collector for flotation of, (P.), B., 505.
 sulphide, containing zinc, treatment of, (P.), B., 156.
 flotation of, B., 104.
 containing zinc, flotation of, (P.), B., 908.
 of Rosebery, Tasmania, A., 190.
 arc spectrum analysis of, A., 463.
Lead pipes, for water, B., 256.
Leaf roller, grey-banded, control of, B., 247.
Leather, manufacture of, (P.), B., 115, 470, 739, 964*, 1058.
 physico-chemical theories of, B., 469.
 casein finishes for, B., 323.
 from mucous stomach membrane of cattle, B., 817.
 assistants for use in, (P.), B., 57.
 bacteriology of liming process in, B., 739.
 protective materials from, B., 601.
 town sewage from, B., 752.

Leather, treatment of, (P.), B., 371, 865*.
 for dyeing, (P.), B., 115.
 grease stains on, B., 1008.
 degreasing of, (P.), B., 115.
 dressing of, (P.), B., 470.
 dressing for, (P.), B., 1155.
 drying of, (P.), B., 1106.
 dyeing of. See under Dyeing.
 fat-liquoring of, B., 242.
 preparation for fat-liquoring and oiling of, (P.), B., 963.
 oiling of, with petrolatum, B., 863.
 single-bath chromium scouring of, B., 777.
 softening of, by exposure to low temperatures, B., 1106.
 staining of, by iron in vegetable tanning liquors, B., 197.
 chrome-tanning of, (P.), B., 1155.
 effect of method of tanning on strength of, B., 468.
 action of vegetable-tanning extracts on properties of, B., 564.
 coating of, (P.), B., 513.
 with rubber latex, (P.), B., 738.
 impregnation of, (P.), B., 1076.
 with rubber solutions, (P.), B., 371.
 waterproofing of, (P.), B., 470.
 casein finishes for, B., 914.
 cellulose ether finishes for, (P.), B., 1058.
 increasing water-resistance of casein pigments on, with chrome alum, B., 864.
 titanium salts as pigments for, B., 419.
 cements for rubber and, B., 862.
 basicity of fibre and shrinkage of, on hair side, B., 469.
 ammonia content of, B., 644.
 water-absorption capacity of, B., 1155.
 p_H of, B., 644.
 determination of p_H of, with glass electrode, B., 818.
 decomposition of, by oxygen, B., 1106.
 effect of temperature on deterioration of, containing sulphuric acid, B., 114.
 resistance of, to acid rot, B., 1105.
 prevention of "red rot" in, B., 564.
 effect of corrosive gases on, B., 686.
 effect of perspiration on, B., 1058.
 non-parasitic eczema damage to, B., 513.
 microscopy of, B., 739.
 physical tests on, B., 864.
 testing of quality of, B., 863.
 testing of waterproofness of, B., 323.
 product from rubber latex and, (P.), B., 738.
 for shuttles of weaving machines, B., 817.
 substitutes, physical chemistry of production of, B., 798.
 for boot uppers, B., 863.
 "prima" substitute for, B., 863.
 artificial, (P.), B., 185.
 manufacture of, (P.), B., 97*, 242, 265, 352, 669, 1090.
 from polymerised oils, B., 417.
 substitute plasticisers for glycerol in, B., 798.
 use of acid-free pectin in, B., 798.
 rubber composition for, (P.), B., 1006.
 chamois, production of, from rejected kid skins, B., 863.
 formaldehyde pretannage in, B., 280.
 chrome-tanned black, production of, B., 817.
 chrome, temperature of, during sorption of water vapour, B., 739.
 chrome-tanned, chrome-tanning compounds on hide fibres of, B., 564.
 dyeing of. See under Dyeing.
 effect of sulphuric acid on, B., 686.
 changes in neutralisation of, B., 601.

Leather, chrome-tanned, dyed, analysis of, B., 601.
 determination in, of acid, B., 323.
 analysis of, B., 1106.
 determination in, of chromium, B., 1008.
 of fat, B., 916.
 curried, adhesion of belting of, to pulleys, B., 864.
 heavy, drying of, in five hours, B., 1105.
 movement of lipins in, during drying, B., 1008.
 oakwood-tanned, deterioration of, by hydrochloric, sulphuric, oxalic, and acetic acids, B., 818.
 parti-coloured, (P.), B., 1155.
 patent, manufacture of, (P.), B., 115.
 printed, production of, (P.), B., 1155.
 quebracho-tanned, absorption of oxygen by, B., 963.
 rejected, use of, for shoes, B., 863.
 scrap, conversion of, into fertilisers, (P.), B., 371.
 sole, production of, chestnut, oak, and quebracho extracts for, B., 281.
 decolorisation of, B., 645.
 tanning of, with pine, oak, willow, and chestnut, B., 114.
 accelerated tanning of, B., 916.
 permeability of, to water, B., 818.
 effect of previous soaking on water absorbed by, B., 469.
 Thuau wear-resistance machine for, B., 371.
 vegetable-tanned, grease stains on, B., 242, 686.
 free water in, B., 644.
 quality of, B., 197, 370.
 tanned with iron salts, analysis of, B., 916.
 upper, tanning of, with sulphite-cellulose extract ZNIKP No. 1, B., 241.
 white, deterioration of, B., 1009.
 vegetable-tanned, relation between structure of limed hide and, B., 644.
 refractive index of, B., 601.
 effect of acids on, B., 818.
 grease stains on, B., 114.
 action of iron compounds on, B., 323.
 formation of resinous spews on, by fish oils, B., 469.
 deterioration of, on storage, B., 420, 601.
 by oxalic acid, B., 242.
 by sulphuric acid, influence of sulphonated cod-liver oil on, B., 916, 1008.
 influence of magnesium sulphate on, B., 420, 777.
 influence of sulphur-containing tanning materials on, B., 1106.
 determination of acidity of, B., 600, 1008.
 determination in, of moisture, B., 281.
 of sulphuric acid and buffer salts, B., 601.
 wet, setting of, (P.), B., 1106.
 white, manufacture of, (P.), B., 739.
 youtfe, synthetic tanning materials for, B., 70.
 sampling of, for analysis, B., 601.
 fluorescence analysis of, B., 797.
 determination of water intake of, B., 420.
 determination in, of iron, volumetrically, B., 1058.
 of free mineral acid, by Procter-Searle method, B., 1106.
 of free sulphuric acid and sulphur, B., 818.
Leather board, manufacture of, (P.), B., 819.

Leathercloth, analysis of solvents in manufacture of, B., 586.
Leather goods, hard and soft, synthetic tanning materials for, B., 70.
Leaves, effect of carbon dioxide on*fluorescence in, A., 794.
 effect of oxygen on fluorescence in, A., 1038.
 fluorescence spectrum of, A., 671.
 functions of, A., 671.
 effect of age on assimilation by, A., 794.
 photosynthesis by, with varying temperature, A., 1038.
 bleaching of, A., 422.
 action of sulphurous acid on, A., 1551.
 constituents of dry matter in, A., 672.
 carbohydrates and their metabolism in, A., 133.
 effect of elliptically-polarised light on formation of carbohydrates in, A., 132.
 assimilation of carbon dioxide by, in various spectral regions, A., 905.
 carotenes in, A., 1434.
 variations in chlorophyll in, A., 1177.
 relation between vitamin-C and chlorophyll in, A., 1546.
 copper on, after spraying with cuprous oxide, B., 327.
 lignin and skeleton substances of, A., 550.
 molybdenum content in, A., 552.
 assimilating, sugars in, A., 672.
 injury of, by acids and tarry matter, B., 118.
 autumn, optical properties of, A., 551.
 illuminated, behaviour of, in carbon-dioxide-free air, A., 1038.
Lecanora gangleoides, constituents of, A., 550.
Le Chatelier principle, and chemical equilibria in homogeneous systems, A., 301.
Lecithin, production of, from egg yolk, B., 825.
 extraction of, from maize and soya beans, B., 475.
 chemical, physical, and colloidal properties of, B., 746.
 cleavage of, by heat, A., 63.
 anomalous dispersion of, in viscous mineral oils, A., 809.
 preparation of clear sols of, A., 822.
 and related compounds, unimolecular films of, A., 442.
 spontaneous decomposition of, A., 772.
 and determination of its isoelectric point, A., 194.
 decomposition of, in egg products, B., 427.
 simplexes of, with polysaccharides, A., 1481.
 effect of injection of perhydryte complex of, on blood of hens, A., 526.
 effect of, on carbohydrates in blood and urine, A., 1015.
 hæmolysis by, A., 881.
 effect of, on hæmorrhage, A., 244.
 effect of feeding pancreas and, on liver-fat, A., 890.
 gastric and pancreatic digestion of, A., 653.
 antirachitic activity of glycerophosphates, methyl phosphates, and, A., 238.
 in brain and in diet, A., 1520.
 egg-yolk and plant, detection of, in macaroni, etc., B., 427.
 soya, A., 31.
 extraction of, B., 475.
 as an antioxidant, A., 43.
 use of, in milling of rubber, B., 113.

- Lecithin**, vegetable, antioxidant properties of, B., 596.
 detection of, as substitute for egg in food pastes, B., 1116.
 electrometric titration of, A., 170.
- Lecithinphosphoric acid**, determination of, colorimetrically, in cakes, etc., containing eggs, B., 250.
 in egg products, B., 43.
- Lectures**, Bakerian, A., 1197.
- Lecture experiments** on combustion and oxidation, A., 600.
- Ledenes**, constitution of, A., 866.
- Leeches**, response of, to acetylcholine, A., 894.
- Legumes**, effect of fertilisers on nodule numbers on, B., 422.
 destruction of bitter principles of, (P.), B., 477.
 accretion of nitrogen by, B., 166.
 nitrogen fixation by, in soils, B., 646.
 sterol content of, A., 1434.
 use of, in pasture production, B., 919.
- Leguminosae**, nitrogen manuring of, B., 1060.
 pollen of, A., 1432.
- Lehrs**, (P.), B., 454, 804.
 for annealing glassware, (P.), B., 1095.
- "Leimfetten"**, artificial, preparation of, B., 559.
- Lemons**, control of red scale on, by spray-fumigation, B., 375.
 use of zinc sulphate in control of brown-rot gummosis of, B., 568.
- Lemon juice**, agglutination of bacteria of, A., 257.
- Lemon trees**, gum from, A., 1180.
- Lemonade**, fermentation of, in pharmaceutical preparations, B., 572.
 preservation of, B., 698.
 formol number of, B., 747.
- Lemongrass oil**, Japanese, B., 877.
- Leonurinine**, A., 422.
- Leonurus cardiaca**, A., 551.
- Leonurus sibiricus**, composition of, A., 1549.
 alkaloid of seeds of, A., 422.
- Lepidium draba**, eradication of, B., 168.
- Lepidocrocite**, A., 919.
 crystal structure of, A., 1061.
 natural and artificial, dehydration of, A., 469.
- Lepidolite**, recovery of lithium sulphate from, B., 723.
- Lepidoptera**, alkali reserve during metamorphosis of, A., 652.
 toxicity of nicotine preparations to, on crops, B., 778.
- Leprosy**, effect of serin on blood-serum in, A., 1517.
 antigen of seroflocculation in, A., 237.
 glucose tolerance in, A., 1149.
- Lettocine**, and its salts, A., 996.
- Lettresinol-A**, and its derivatives, A., 1244.
- Lettuce**, growth inhibitor in seeds of, A., 674.
 rays inhibiting germination of seeds of, A., 1436.
 sterilisation of seeds of, B., 374, 742.
 vernalisation of, B., 742.
 analysis of tissues of, for determination of fertiliser requirement, B., 742.
- Leucæmia** in mice, A., 1007.
 myelogenous, basal metabolism and iodine in blood in, A., 887.
 myeloid, A., 516.
- Leucine**, methionine as impurity in preparations of, A., 536.
 aminolysis of, A., 1356.
 salts, A., 1486.
- L-Leucine**, benzenesulphonyl derivative, butyl ester, A., 101.
*iso*Leucine, metabolism of, A., 746.
*d-iso*Leucine, solubility of, in water, A., 695.
- ψ -Leucine**, action of crepsin and trypsin on polypeptides containing, A., 1228.
- ψ -Leucines**, and their derivatives, A., 71.
- Leucite**, utilisation of, B., 1141.
 production of aluminium nitrate from, (P.), B., 61.
- Leucoanthocyanidins**, A., 985.
- Leucoanthocyanins**, A., 985.
- Leucocytosis**, influence of protein substances on, A., 640.
- Leucophytes**, flagellated, oxytrophs and nutrition of, A., 254.
- Leucothoe grayana**, constituents of stems of, A., 1432.
- ψ -Leucyl chloride hydrochlorides**, A., 1228.
- dl*-, *d*-, and *l*-Leucylalbumins**, action of pepsin-hydrochloric acid and trypsin-kinase on, A., 1279.
- ψ -Leucyl-*l*-tyrosines**, and their *p*-toluenesulphonates, A., 1228.
- Leukometer**, measurement of colour with, B., 785.
- Levosin**, action of top yeast on, A., 1027.
 in grain and meal, A., 1290.
- Licania rigida**, oil from. See *Oiticica* oil.
- Licanic acid**, A., 607.
- iso*Licanic acid**, A., 607.
- Lice**, determination of naphthalene in powders for control of, on poultry, B., 74.
- Lichens**, chemistry of, A., 1432.
 basic dyes from, B., 762.
 Irish, constituents of, A., 133, 550.
- Lichen acids**, A., 1501.
- Lichen pigments** of pulvinic acid series, A., 1238.
- Lichen substances**, A., 83, 213, 490, 749, 905, 977, 1234, 1238, 1366.
- Lichesteric acid**, reduction of, A., 864.
- Liesegang rings**, A., 1202.
 influence of impurities on formation of, A., 164.
 theory of, A., 27, 702.
 modifications of, A., 823.
 effect of acids and alkalis on, A., 1321.
 in silicic acid gel, A., 27.
- Light**, neutrino theory of, A., 427, 1187.
 collision of quanta of, A., 143.
 intensity of, for spectral apparatus, monochromators, etc., A., 57.
 measurement of small intensities of, A., 800.
 screens for varying colour and intensity of, (P.), B., 526.
 velocity of, A., 8.
 depolarisation of, by colloidal solutions, crystalline precipitates and films on glass, A., 1054.
 scattered by liquids, A., 1054.
 reflexion of, and topography of surfaces, A., 147.
 absorption of, chemical reactivity and, A., 144.
 measurement of, A., 465, 1475.
 with prism mirror spectrometer and thermo-clement, A., 427.
 in gases, A., 137.
 apparatus for studying diffusion and absorption of, B., 1.
 theory of molecular dispersion of, in heated crystals, A., 565.
 scattering of, in liquids, Doppler effect in, A., 1053, 1445.
 photo-electric photometry of, A., 11.
 by molecules, A., 146.
- Light**, scattering of, by particles suspended in media of higher refractive index, A., 11.
 transformation of images of, into electron images, A., 557.
 testing of fastness to, (P.), B., 1101.
 apparatus for, B., 1, 267; (P.), B., 533.
 effect of atmospheric ozone on biological activity of, A., 895.
 artificial, sources of, for photography, A., 713.
 from Mazda, neon, sodium, and mercury-vapour lamps, growth of plants in, B., 867.
 molecularly-scattered, examination of, with a Fabry-Perot etalon, A., 565.
 polarised, materials for production or detection of, (P.), B., 97.
 ultra-violet, micro-photography and radiation studies with, A., 188.
 gaseous discharge tubes as sources of, A., 1475.
 photochemical measurement of, A., 178.
 irradiation of fats and oils with, B., 1054.
 apparatus for treatment of fluids with, (P.), B., 911.
 permeability of the atmosphere and of glass to, A., 561.
 absorption of, by glass for spectacles, B., 992.
 transmission of, by glass, A., 279.
 effect of, on catalysts for hydrogen peroxide, A., 47.
 on substances of the cell nucleus, A., 120.
 on crystalline pepsin, A., 252.
 sterilisation by, A., 788; (P.), B., 827.
 bactericidal action of, on sea water, B., 528.
 photo-lethal action of, A., 537.
 resistance of infusoria to, A., 120.
 effect of, on living protozoa, A., 124.
 antirachitic effect of, in a smoky atmosphere, A., 1546.
 effect of, on carbohydrate metabolism, A., 121.
 solar, B., 1060.
 extreme ultra-violet, wave-length standards in, A., 1438.
 visible, photo-electric cells for measurement of, A., 1475.
 visible and ultra-violet, effect of, on frogs, A., 400.
- Light counters**, photo-electric apparatus for measurement of efficiency of, A., 465.
- Light filters**, from cyanine dyes, B., 1119.
 for wave-length 560 μ , A., 912.
 Christiansen, A., 722.
 internal, A., 713.
 monochromatic, A., 188.
 monochromatic green, A., 598.
 ultra-red, glass for, B., 674.
- Lignin**, A., 214, 861, 1052.
 and related components, A., 623, 1373.
 and nitro-derivatives, B., 399.
 free phenolic group in, A., 621.
 fluorescence-microscopy of lignification and, B., 299.
 vapour-pressure lowering of liquids on adsorption by, A., 1316.
 relation of crystal structures of humic acid, coal, and, A., 1451.
 swelling of, A., 165.
 manufacture of dispersions of, (P.), B., 266.
 acetylation and methylation of, A., 1502.
 ethyl ether, reaction of, with thioglycollic acid, A., 1502.

- Lignin derivatives, manufacture of**, (P.), B., 17, 987.
 ultra-violet absorption spectra of, A., 145.
 cresol derivatives of, A., 84.
 combination of, with hemicelluloses, A., 1435.
 fermentation of, B., 432.
 microbiological decomposition of, and soil organic matter, B., 372.
 effect of, on decomposition of proteins in soils, B., 965.
 alkali-. See Alkali-lignin.
 bagasse, B., 184.
 removal of, B., 264.
 acetyl and methyl derivatives of, A., 1239.
 from bagasse and wood, B., 1039.
 from barley straw, and their derivatives, A., 214.
 beechwood, A., 550.
 from bleached sulphite-cellulose, B., 718.
 in Douglas fir, B., 16.
 jute-, A., 214, 978, 1374, 1502.
 chlorination of, A., 214.
 from oat-hulls, alkaline oxidation of, A., 214.
 pinewood, sulphonation of, B., 490.
 detection of, with thioglycollic acid, A., 1259.
 in plant cell-walls, A., 673.
 determination of, at low temperatures, A., 344.
 errors in, B., 666.
 in faeces, A., 648.
 in wood, B., 845.
 in small samples of wood, B., 408.
 in Australian wood, B., 357.
 determination of cellulose and, in plant products, B., 398.
Ligninsulphonic acid, A., 1373.
Ligninsulphonic acids, separation of, from sulphite-cellulose liquors, B., 95.
Lignite, petrography of, A., 191.
 constitution of humic acid of, A., 623.
 hydrogen sulphide in gases from distillation of, B., 390.
 colloidal dispersion and hydrogenation of, B., 340.
 briquetting of, B., 389.
 production of coke from, B., 707.
 dust, briquetting of, (P.), B., 662.
 explosive properties of, B., 291.
 German, rare elements in ash of, B., 978.
 Moscow basin, influence of partial hydrogenation on coking power of, B., 707.
 Tcheliabinsk, tar from, B., 53.
Lignonesulphonic acids, salts, detection of, B., 350.
Lilac, *Phytophthora* diseases of, B., 517.
Lilium croceum, mineral nutrition of corolla of, A., 552.
 nitrogenous nutrition of, A., 1037.
Lilium martagon, chromatin in nuclei of, A., 796.
Limbs, oxygen utilisation and lactic acid production in, A., 775.
Lime trees, oil in, A., 269.
Limestone, effect of addition of salt during calcination of, B., 589.
 burning of, (P.), B., 452.
 flotation of, B., 304.
 use of, in blast-furnaces, B., 676.
 in production of sulphite-pulp, B., 221.
 determination of effective porosity of, B., 947.
 determination of Vicat modulus of, B., 24.
Limestone, "dicapho," and bone-meal as mineral supplements for pigs, A., 654.
 dolomitic, effect of, on crops, B., 422.
 marine, formation of, A., 322.
 Trinidad, manganese in, B., 917.
 analysis of, B., 60.
 determination in, of lime, B., 99.
Limonene, bioconversion of, to carvone, A., 351.
d-Limonene, dipole moment of, A., 694.
Limonite derived from molybdenite, A., 955.
 of Orient mine, Colorado, A., 60.
Limulus polyphemus. See Crabs, horseshoe.
Linaloe oils, Indian and Mexican, B., 174.
Linalool, dehydration of, with formation of myrcene, A., 188.
 isomerisation of, to geraniol, A., 983.
Lindgrenite, A., 726, 1345.
Linear phenomena, A., 698.
Linen, dyeing of. See under Dyeing.
 absorption of water by, B., 142, 350.
 removal of ink, rust, and fruit stains from, (P.), B., 186.
 cuprammonium hydroxide solutions for determination of chemical damage to, B., 540.
Ling-liver oil, New Zealand, vitamin-A in, B., 683.
Linkings, acetylenic, refraction equivalents of, A., 1222.
 application of Raman spectrography to, A., 1221.
 chemical, A., 150.
 co-ordinate, theory of, A., 427, 1188.
 magnetic susceptibility constants of, A., 289.
 double, experimental foundations of rule of, A., 329.
 and optical absorption, A., 1300, 1443.
 additions to, A., 938, 1500.
 addition of mercaptans to, A., 975.
 conjugate, Raman spectra of, A., 564.
 non-terminal addition of hydrogen bromide to, A., 1223.
 ethylenic, application of Raman spectrography to, A., 1221.
 absorption spectra of compounds containing, A., 1443.
 triple, A., 432.
Linnaeite, and related minerals, A., 727.
 of Katanga and N. Rhodesia, A., 1478.
Linoleic acid, bromination of, A., 473.
 iodine values of, A., 473.
 autoxidation of, B., 364.
 water-insoluble salts, production of solutions of, (P.), B., 511.
 ethyl ester, polymerisation of, A., 1482.
 methyl ester, polymerisation product of, A., 473.
 identification of, A., 998.
Linoleic acid, dithiocyno-, A., 473.
Linolenic acid, bromination of, A., 473.
 iodine values of, A., 473.
 ethyl ester, polymerisation of, B., 640.
 polymerised, hydrogenation of, A., 1482.
 identification of, A., 998.
Linolenic acid, tetrathiocyno-, A., 473.
Linoleum, production of, (P.), B., 279, 320, 599.
 backing for, (P.), B., 161.
 manufacture of base for, (P.), B., 1005.
 cement for, (P.), B., 1154.
 manufacture of, (P.), B., 1104.
Linseed, quantity of oil in, in maturation and germination, A., 269.
 flavin-like pigment from, A., 421.
 powdered, determination of, B., 332.
 determination in, of oil, B., 911.
Linseed cakes, determination in, of rice grains, B., 922.
Linseed oil, refining of, for varnishes, B., 813.
 chemistry of, and thickening of its mixtures with zinc white, B., 640.
 conservation of, in priming paints, B., 561.
 antioxidants for, B., 1003.
 losses in, B., 509.
 effect of exposure on films of, B., 597.
 hydrolysis of, by fat-splitting ferments, B., 597.
 action of sulphur monochloride on, B., 599.
 Egyptian, composition of, B., 1054.
 polymerised, hydrogenation of, B., 640.
 detection of, in mustard-seed oil, B., 365.
Linum usitatissimum, formation of mucilage in seeds of, A., 133.
Lions, thyroid of. See under Thyroid.
Lipæmia, diabetic, blood-fat in, A., 1148.
Lipase, activity of, in healthy and carcinomatous organs, A., 1025.
 in tissues of rachitic rats, A., 403.
 effect of thyroid on, A., 1536.
 castor-bean, A., 1025, 1416.
 fungus, activity of, A., 534.
 gastric, of silkworms, A., 1025.
 pancreatic, specificity and inhibition characteristics of, A., 403.
 effect of avitaminosis-B on action of, A., 415.
 effect of zinc salts on hydrolysis by, A., 404.
 in wheat seeds, A., 1179.
 determination of, in pancreas, A., 1025.
 α -**Lipase**, extraction and preservation of, from blood-serum, A., 1025.
Lipins, extraction of, from animal and vegetable materials, (P.), B., 1150.
 from serum, A., 1261.
 from tubercle bacilli, A., 407.
 physical chemistry of, A., 1202, 1523.
 emulsifying action of, A., 445.
 antagonism of, A., 515.
 antigenic properties of, A., 375.
 transport of, in the organism, A., 1151.
 exchange of, at birth in umbilical circulation, A., 890.
 rôle of, in serum, A., 373.
 of liver, A., 1004.
 mammalian, A., 534.
 in organs, relation of pituitary to, A., 1397.
 plasma, diurnal variations in, A., 1000.
 from tubercle bacilli, purification and fractionation of, A., 1395.
 determination of, in micro-organisms, A., 899.
 in milk, microchemically, A., 512.
Lipochromes, selective accumulation of, in blood-serum, A., 1001.
 metabolism of. See under Metabolism.
 of fats, A., 1397.
 of higher animals and of man, A., 1397.
 of marine animals, A., 882.
 human, isolation of components of, A., 645.
 in human liver, A., 1264.
Lipoidosis, A., 1009.
Liqueurs, egg, determination of yolk content of, B., 696.
Liquids, A., 1305.
 theory of, A., 1058, 1198.
 mol. wt. of, A., 814.
 pure, at their b.p., A., 435.
 structure of, A., 285.
 structure and viscosity of, A., 1313.

Liquids, quasi-crystalline structure of, and Raman effect, A., 281.
 X-ray study of molecular arrangement in, A., 152.
 molecular clustering in, A., 11.
 molecular field of, A., 1449.
 molecular strength of, A., 820.
 electrical purification of, (P.), B., 813.
 clarification of, by sols, (P.), B., 100.
 apparatus for, (P.), B., 788.
 isinglass product for, (P.), B., 963.
 spray electrification of, A., 1446.
 concentration, distillation, and evaporation of, (P.), B., 435.
 deodorisation of, (P.), B., 290.
 filtration of, (P.), B., 3, 4.
 filtration apparatus for, (P.), B., 658.
 filters for, (P.), B., 50, 787.
 apparatus for decolorising and filtering of, (P.), B., 84.
 sterilisation of, (P.), B., 880.
 by heat, (P.), B., 978.
 straining apparatus for, (P.), B., 658.
 apparatus for straining and cooling of, (P.), B., 787.
 cooling of, (P.), B., 1122.
 rapid freezing of, (P.), B., 532.
 firing of baths for heating of, (P.), B., 929.
 heating apparatus for, (P.), B., 435.
 aëration of, (P.), B., 834.
 apparatus for, (P.), B., 611.
 agitation for, (P.), B., 930.
 drying of, (P.), B., 579.
 evaporation and cooling of, (P.), B., 579.
 filling of, into apparatus through capillary tubes, A., 321.
 thickeners for, B., 289.
 diffusers for blowing gases into, (P.), B., 435.
 mixing of, apparatus for, (P.), B., 482.
 with gases, (P.), B., 290.
 apparatus for removal of gases from, (P.), B., 258.
 separation of, from gases, (P.), B., 579, 1027.
 apparatus for, (P.), B., 610.
 from solids, (P.), B., 1075, 1076.
 from suspensions, sludges, etc., (P.), B., 658.
 apparatus for treatment of, with gases, (P.), B., 211, 388, 435, 755.
 with solids, (P.), B., 532.
 with ultra-violet light, (P.), B., 911.
 portable apparatus for oligodynamic treatment of, (P.), B., 774.
 double air-trap for, A., 1098.
 properties of, A., 575.
 ultra-violet absorption spectra of binary mixtures of, A., 428.
 molecular rotation in, A., 569.
 hindered rotation and molecular oscillation in, A., 1191.
 rotational state of molecules in, A., 430, 567.
 refractive index of, A., 1097.
 determination of, B., 833.
 rotational Raman effect in, A., 146.
 influence of intermolecular action on Raman effect in, A., 1446.
 fluorescence in, A., 429.
 Doppler effect in light scattering in, A., 1445.
 depolarisation of light scattered by, A., 1054.
 longitudinal scattering of light by, A., 1301.
 polarisation of, A., 917.
 anisotropy of optical polarisation field in, A., 148.

Liquids, photo-electric photometry of scattering of light in, A., 11.
 dielectric constants of, under high pressure, A., 683.
 and their mixtures, A., 283.
 magnetic variation of, A., 13, 1192.
 measurement of magnetic susceptibility of, at high temperatures, A., 321.
 thermal conductivity of, A., 1455.
 effect of electric field on, A., 691, 692.
 surface conductivity at interfaces of, with solids, A., 705.
 specific heat of, A., 574.
 and their vapours, A., 704.
 heats of condensation of, A., 436.
 pure, b.p. of, A., 289.
 association of, at the b.p., A., 815.
 determination of temperatures of, (P.), B., 1074.
 evaporation of small drops of, in gases, A., 699.
 feeding of, during vaporisation, (P.), B., 706.
 heat transfer by vaporisation of, B., 481.
 internal latent heat of vaporisation of, A., 817.
 apparatus for spray evaporation of, (P.), B., 84.
 measurement of density of, A., 189.
 control of viscosity of, (P.), B., 658, 755.
 effect of electric field on viscosity of, A., 926.
 effect of magnetic field on viscosity of, A., 1198, 1455.
 association and fluidity of, A., 290.
 velocity of absorption of gases by, A., 41.
 absorption of mists by, A., 1067.
 effect of bubble size on, A., 1314.
 lowering of vapour pressure of, on adsorption by wood and lignin, A., 1316.
 sonic interferometer for study of absorption in, A., 320.
 coalescence in stages between drops of, A., 1062.
 stability limits of drops of, in collision, A., 1319, 1320.
 dispersion of ultrasonic waves in, A., 20.
 interfacial tension between, A., 1070.
 determination of surface tension of small amounts of, A., 1342.
 surface tension and molecular structure of, A., 284.
 temperature coefficient of surface tension of, A., 283.
 pure, surface tension, density, and molecular constitution of, A., 432.
 physical properties of systems of, in two layers, A., 292.
 surface layer of, A., 157.
 films of, in fine-pores of plastic materials, A., 294.
 evaporation of, (P.), B., 84.
 X-ray diffraction of, A., 18.
 interaction of, A., 1317.
 thin, insoluble substances on, A., 442.
 colloidal behaviour of critical ternary mixtures of, A., 1459.
 equation of state for, A., 1064.
 anisotropy of, round gas bubbles, A., 283.
 separation of matter dispersed in, (P.), B., 1076.
 recording of suspended matter in, (P.), B., 658.
 electro-optical apparatus for detection of suspended particles in, (P.), B., 507.
 observation of reactions at interfaces of, A., 58.
 contact apparatus for, (P.), B., 1122.

Liquids, contact apparatus for gases and, (P.), B., 84, 610, 1076.
 reaction apparatus for gases and, (P.), B., 5.
 physical chemistry of contact apparatus for liquids and, B., 82, 337.
 pump for delivery of, at constant rates, B., 82.
 device for admission and removal of, from revolving shafts, (P.), B., 482.
 apparatus for removal of, from solids, (P.), B., 754.
 determination of colour of, (P.), B., 755.
 Liquids, aluminous. See under Albuminous.
 aliphatic, long-chain, X-ray diffraction of, A., 921.
 anisotropic. See Anisotropic liquids.
 associated, dipole moments of, A., 683.
 binary, physico-chemical analysis of, A., 693.
 binary mixed, molecular clustering in, A., 1200, 1445.
 at lower critical temperature, A., 928.
 corrosive, carbon apparatus for, (P.), B., 982.
 coating of metal containers for, (P.), B., 909.
 of different density, separators for, (P.), B., 84.
 dipole, absorption of short electric waves in, A., 683.
 immiscible, apparatus for countercurrent treatment of, (P.), B., 883.
 mineral and biological, distinction between, A., 674.
 mixed, purification of, (P.), B., 532.
 separation of, (P.), B., 618.
 by rectification, (P.), B., 388.
 refractivity of, A., 24.
 rapid evaporation of, A., 290.
 viscosity of, at high pressures, A., 24.
 equilibrium in, A., 575.
 computation of volumetric components of, B., 753.
 binary, ultra-violet absorption spectra of, A., 145.
 evaporation of, A., 157.
 cryoscopy of, A., 57.
 surface tension of, A., 438.
 thermodynamics of, A., 24.
 determination of proportion of constituents of, (P.), B., 388.
 normal, density and molecular structure of, A., 15.
 organic, infra-red absorption spectra of, A., 680.
 breakdown and conductivity of, A., 683.
 effect of hydrogen linking on b.p. and dielectric constant of, A., 683.
 magnetic susceptibility of, A., 289.
 electrothermal dissociation of, (P.), B., 462.
 mutual solubility of deuterium oxide and, A., 1314, 1457.
 surface tension and solvent action of, A., 284, 819.
 polar, dielectric constants of, A., 683.
 supercooled, crystal nuclei in, A., 1307.
 viscous, theory of, A., 575.
 filtration of, A., 59.
 volatile, recovery of, (P.), B., 883.
 apparatus for measuring vapour pressure of, B., 49.
 froth, for sealing of, (P.), B., 1027.
 cell for optical examination of, (P.), B., 658.
 automatic apparatus for optical analysis of, (P.), B., 5.
 sampling apparatus for, (P.), B., 579.
 determination of degree of purity of, A., 321.

- Liquid-liquid junctions**, A., 598.
Liquid state, continuity of, with solid state, A., 1062.
Litchi chinensis, B., 821.
Litharge. See Lead oxide.
Lithium, B., 233.
 constitution of, A., 560.
 molecules, wave mechanics of, A., 15, 279.
 isotopes, A., 1295.
 masses of, A., 140.
 abundance of, A., 140.
 in the sun, A., 141.
 separation of, A., 7.
 occurrence of, in the earth, A., 190.
 in waters of Lurisia and Mondovi, A., 1477.
 in waters of Turin hills, A., 1343.
 production of, electrolytically, A., 176; B., 502.
 spectrum of, A., 135.
 Paschen-Back effect in, A., 423.
 ultra-violet absorption spectrum of, A., 423.
 standard electrode potential of, in methyl alcohol, A., 1324.
 disintegration of, by slow neutrons, A., 277, 1296.
 by protons, A., 7, 559.
 γ -rays from, A., 910.
 by protons and deuterons, A., 1441.
 range of disintegration particles from, produced by proton bombardment, A., 426.
 transmutation of, by deuterons, A., 1441.
 α -particles from, bombarded by protons, A., 1186.
 γ -rays from bombardment of, with protons, A., 1186, 1296.
 bombardment of, with α -rays, A., 1049.
 electronic energy bands in, A., 560.
 specific heat of, at low temperatures, A., 574.
 anomaly in, A., 1454.
Lithium alloys with bismuth and with cadmium, A., 692.
 with indium and with mercury, A., 1314.
 with lead and with tin, A., 23.
 with magnesium, equilibria in, A., 1455.
 with mercury or zinc, X-ray analysis of, A., 1455.
Lithium compounds, with ammonia, A., 590.
Lithium salts, molten, action of, on glass, A., 713.
Lithium bromide, apparent volume and compressibility of, in concentrated solutions, A., 1456.
 crystal and polarisation effects in, A., 284.
 carbonate, reaction of, with alumina, A., 1323.
 with ferric chloride in hydrofluoric acid, A., 1332.
 perchlorate, hydrates of, A., 1467.
 chloride, electrical conductivity of, in water-alcohol solutions, A., 169.
 f.p. of aqueous solutions of potassium nitrate and, A., 30.
 apparent volume and compressibility of, in concentrated solutions, A., 1456.
 viscosity and fluidity of, in acetone solution, A., 31.
 vapour pressures of saturated solutions of, A., 35.
 double salt of, with cupric chloride, A., 1332.
 cobaltinitrite, A., 178.
 deuteride and hydride, crystal structure of, A., 812.
- Lithium fluoride crystals**, transparency of, A., 1184.
 halides, diamagnetic susceptibilities of ions in, A., 569.
 hydride, magnetic susceptibility of, A., 689.
 thermal dissociation of, A., 447.
 hydrides, band spectra of, A., 561, 1051.
 iodide, conductivity of, in molten iodine, A., 584.
 stable, preparation of, A., 832.
 nitrate, oxygen overvoltage in electrolysis of mixtures of, with potassium and sodium nitrates, A., 1079.
 nitride, structure of, A., 433, 812.
 oxide, equilibrium of, with carbon dioxide and silica, A., 1323.
 with nitrogen pentoxide and water, A., 583, 1461.
 thermionic properties of systems of alumina, silica, and, A., 140.
 effect of, on thermal expansion of glass, B., 767.
 phosphate, treatment of minerals of, (P.), B., 494.
 sulphate, recovery of, from spodumene and lepidolite, B., 723.
 vapour pressure of saturated solutions of, A., 35.
 monohydrate, crystal structure of, A., 285.
Lithium organic compounds, preparation of, A., 1112.
 rates of formation of, and of magnesium organic compounds, A., 939.
Lithium determination :—
 determination of, spectroscopically, A., 185.
Lithocholic acid, structure of, A., 749.
 esters, A., 1494.
 action of, on diphtheria and tetanus toxins, A., 1395.
 β -Lithocholic acid, and its methyl ester, A., 1237.
Lithography, (P.), B., 334.
 aluminium and zinc plates for, production of, (P.), B., 236.
 press plates for, (P.), B., 334.
Lithopone, manufacture of, (P.), B., 320.
 by wet precipitation, (P.), B., 239.
 dispersion of, in paint manufacture, (P.), B., 914.
 testing of, B., 1151.
 high-strength, (P.), B., 960.
Lithothamnion calcareum, starch of, A., 134.
Litmus, substitute for, in pharmaceutical practice, B., 828.
Liver, rôle of, in growth, reproduction, and lactation, A., 1404.
 function of, A., 1526.
 control of, by preformed ammonia, A., 654.
 effect of calcium diet on, A., 1021.
 effect of diathermy on, A., 1147.
 effect of endocrine products and vegetable poisons on, A., 540.
 protein exchange in relation to, A., 237.
 photosynthesising function of, A., 1407.
 water and fat metabolism in disturbed function of, A., 1273.
 influence of chologogues on respiration of, A., 116.
 in relation to fat metabolism, A., 390.
 rôle of, in fat and lipin metabolism, A., 523.
 in lipin metabolism, A., 890.
 production of amino-acids and urica in, A., 1152.
 amylases of, A., 401.
 carbohydrate metabolism in, A., 241.
- Liver**, effect of cold on carbohydrate and fat content of, A., 1264.
 action of thyroxine on carbohydrates and proteins in, A., 127.
 chlorine in, in hyperthyroidectomy, A., 1521.
 citric acid dehydrase of, A., 1162.
 separation of enzymes of, A., 402.
 fixation of esterase by, A., 251.
 fat of, effect of feeding lecithin and pancreas on, A., 890.
 production of, in relation to protein diet, A., 523.
 effect of pitressin on, A., 902.
 mutual displacement of fat and glycogen in cells of, A., 1016.
 fatty acid desaturation in, A., 653.
 flavinphosphoric acid from, A., 1521.
 glycogen in, A., 232, 1265.
 action of drugs on, A., 1156.
 from glucose and its derivatives, A., 645.
 after feeding with glucose, iodine, and thyroid, A., 900.
 effect of hepatic denervation on, A., 243.
 effect of crystalline insulin on, A., 901.
 effect of posterior pituitary extracts on, A., 902.
 glycogen formation in, A., 891.
 effect of adenylic and cholic acids on, A., 1157.
 due to ingestion of egg-white and -yolk and cholic acid, A., 390.
 influence of bile acids on, A., 111.
 inhibition by metals of adrenaline glycogenolysis in, A., 410.
 hamatopoietic substance in, A., 885.
 hormone of. See under Hormones.
 effect of ammonium chloride on ketone formation in, A., 1273.
 lactic acid in, A., 892.
 lipins of, A., 1004.
 dehydrogenation of phenylaliphatic acids in, A., 1274.
 phosphoesterases from, A., 251.
 enzymic fission of polydiaminophosphatide of, A., 534.
 proteins of, A., 376.
 effect of heat and hot alcohol on, A., 1266.
 production of sympathin in, A., 788.
 formation of urea in, A., 242.
 uric acid in, and its elimination, A., 528.
 substance A' and vitamin-A in tissues of, A., 668.
 effect of, on cerebral function, A., 1271.
 in diet, effect of, on blood-cholesterol and resistance to saponin, A., 1000.
 renal effects of diets containing, A., 237.
 Italian therapy of, A., 236.
 manufacture of therapeutic preparations of, (P.), B., 829.
 action of preparations of, on blood-pressure, A., 1019.
 anti-anæmia preparation from, A., 885.
 preparations of, for treatment of pernicious anæmia, A., 514.
 use of grain-fed pigeons in bio-assay of, A., 774.
 relation of vitamin-A to disorders in, A., 792.
 relation of plasma-proteins to cirrhosis of, A., 643.
 tyrosine and cystine in proteins of fluids in cirrhosis of, A., 1001.
 diseases, metabolism in, A., 237.
 effect of adrenaline on plasma-fat acids in, A., 1402.
 chloride in blood in, A., 516.

- Liver diseases**, blood-lactic acid in, A., 516.
 mercury precipitation by serum in, A., 643.
 effect of benzoic acid on excretion of uric acid in, A., 1007.
 Takata reaction for diagnosis of, A., 1527.
 bull- and cow-, vitamin-A content of, A., 129.
 calves foetal, calcium in, A., 243.
 chicken's, effect of feeding, on depa-
 ncreatised dogs, A., 1404.
 "cholesterol" fatty, effect of choline on, A., 244.
 dog's, influence of sodium caseinate on iron content of, A., 644.
 perfused, oxygen consumption in, A., 890.
 in depaencreatised dogs maintained with insulin, lipins in, A., 411.
 fish, preservation of, (P.), B., 972.
 glycogenolysis in, at low temperatures, A., 658.
 fish and rabbit's, glycogen in, A., 1144.
 foetal, rhythmic changes in, after feeding, A., 1397.
 frog's, seasonal variations in constituents of, A., 1003.
 nitrogen in, under various conditions, A., 1004.
 guinea-pig's, action of chloroform on lipin-phosphorus content of, A., 779.
 human, lipochrome in, A., 1264.
 islinagi and ox, nutritive value of, A., 1272.
 pig's, fatty acids of, A., 1004.
 hydrocarbons of, A., 233.
 of pigeons, heterogonic growth and com-
 position of, A., 778.
 rabbit's, effect of incretin on glycogen in, A., 1172.
 post-mortem glycogenolysis in, A., 1016.
 distribution of phosphorus in, during changes in blood-sugar and liver-glycogen, A., 1172.
 purines in, A., 1266.
 rat's, formation of carbohydrate from fat in, A., 523.
 carbohydrate formation from glyce-
 rophosphate in, A., 1273.
 effect of choline on fat of, A., 1151.
 flavin content of, A., 669.
 changes in lipin content of, A., 113.
 elimination of vitamin-A from, A., 261.
- Liver extracts**, adrenaline-like substances in, A., 894.
 action of, on blood-calcium and -phos-
 phorus, A., 537.
 hydrolysis of glycogen by, A., 533.
 inhibition of haemolysis by, A., 881.
 effect of inanition on uricolytic activity of, A., 405.
- Lizards**, depot-fat of, A., 645.
 effect of pituitary extracts on genital system of, A., 902.
 male, effect of antuitrin-S on, A., 1171.
- Lobaric acid**, constitution of, and its deriv-
 atives, A., 1366.
- Lobariol derivatives**, A., 1366.
- Lobariolcarboxylic acid**, and its dimethyl
 ether dimethyl ester, A., 1366.
- Lobelanine**, synthesis of, under physio-
 logical conditions, A., 873.
- Locusts**, control of, in Amatikulu, B., 423.
 Philippine experiments on, B., 374.
 nutritive value of, A., 391; B., 428.
 destruction of, in flight by sodium
 arsenite clouds from aircraft, B., 1014.
- Locusts**, black, composition of leaf mould
 and leaves from, B., 646.
Phytophthora wilt of seedlings of, B.,
 568.
- Loganberries**, control of *Bytlurus tomentosus*
 on, B., 1013.
- Lophophorine**, synthesis of, A., 1389.
- Loquat**. See Medlars, Japanese.
- Lubricants**, (P.), B., 217, 346, 794, 937.
 manufacture of, (P.), B., 760, 1127, 1128.
 by hydrogenation of hydrocarbon oils,
 (P.), B., 345.
 treatment and testing of, (P.), B., 136.
 lubricating and physical properties of,
 B., 582.
 removal of soap from emulsions of, (P.),
 B., 136.
 production of suspensions of, (P.), B.,
 760.
 viscosity of, B., 179.
 from cellulose derivatives, (P.), B., 892.
 value of mineral oils as, B., 212.
 olive oil as, B., 813.
 rubber in, B., 791.
 action between bearing metals and, B.,
 954.
 uses of, B., 1032.
 for cotton and woollen industry, B., 791.
 for high temperatures, (P.), B., 934.
 for metal working, (P.), B., 277.
 testing of, B., 54, 1081; (P.), B., 1084,
 1128.
 laboratory testing of, B., 935.
 corrosion-inhibiting, (P.), B., 1034.
 extreme-pressure, (P.), B., 938.
 graphite, (P.), B., 217.
 production of, (P.), B., 394.
 colloidal, production of, (P.), B., 486.
 graphited, efficiency of, B., 889.
 high-pressure, (P.), B., 794.
 non-freezing, B., 981.
 production of, B., 1125.
 solid, (P.), B., 760.
- Lubricating greases**, (P.), B., 109, 892, 937.
 production of, (P.), B., 713, 733, 1102.
- Lubricating oils**, (P.), B., 90, 217, 261, 486,
 759, 937, 1034.
 synthesis of liquid fuels and, from carbon
 monoxide and hydrogen, B., 179.
 production of, (P.), B., 90, 136, 217, 261,
 295, 346, 441, 538, 713, 759, 760,
 794, 937, 984, 1035.
 from Binagadi crude oil, B., 7.
 from solid carbonaceous materials,
 (P.), B., 583.
 from coal, B., 293.
 from ethylene, B., 889.
 from German crude petroleum, B., 392.
 from Surakhani Bottoms, B., 8.
 from primary tar from Barzass coal,
 B., 790.
 by solvent process, (P.), B., 441.
 by contact neutralisation method, B.,
 8.
 and paraffin wax, (P.), B., 346.
 solvent extraction of, (P.), B., 346.
 treatment of, (P.), B., 346, 760.
 with solvents, (P.), B., 486.
 apparatus for clay-treatment of, (P.),
 B., 893.
 purification of, (P.), B., 218.
 purification and revivification of, (P.),
 B., 760.
 refining of, B., 535, 1032; (P.), B., 295,
 892.
 by selective extraction, B., 133, 484.
 from Pengu-Gurwich process, B., 7.
 with liquid sulphur dioxide, B., 133.
 influence of refining on oxidisability and
 oiliness of, B., 8.
- Lubricating oils**, dewaxing of, B., 7, 8
 (P.), B., 1035.
 chilling of, for dewaxing, (P.), B., 486.
 removal of asphalt from, (P.), B., 181.
 filtration apparatus for, (P.), B., 50.
 compounding of, with bright stocks, B., 8.
 reducing pour point of, (P.), B., 89.
 pour-test depressor for, (P.), B., 346.
 improvement of colour of, (P.), B., 346.
 apparatus for determination of b.p. of,
 B., 837.
 lowering solidification temperature and
 cloudiness of, B., 8.
 viscosity-temperature characteristics of,
 B., 54.
 viscosity of mixtures of, B., 484.
 resistance of, to pressure, B., 889.
 pressure-volume-temperature relations
 for fractions of, B., 890.
 dialysis of, (P.), B., 617.
 hydrogenation of, B., 1032; (P.), B.,
 617.
 oxidation of, B., 711.
 inhibitors for oxidation and sludge
 formation in, (P.), B., 441.
 oxidisability, oiliness, and surface ten-
 sion of, B., 8.
 perhydrochrysene in, B., 714.
 regeneration of, B., 791.
 classification of, B., 981.
 determination of Conradson carbon
 number of, B., 1032.
 aeroplane, refining of, (P.), B., 937.
 aromatic, production of, (P.), B., 261.
 automobile, low temperature properties
 of, B., 614, 889.
 for automobile chassis, (P.), B., 181.
 gear, (P.), B., 394.
 graphited, B., 1032.
 Grozni, refining of, B., 1032.
 hydrocarbon, production of, (P.), B.,
 937.
 from kogasin, constitution of, B., 889.
 machine, used, regeneration of, B., 212.
 mineral, treatment of, (P.), B., 838.
 aromatic constituents of, B., 615, 710.
 relation between physical properties
 and composition of, B., 615.
 ageing of, B., 8.
 extinction coefficients of, B., 133.
 determination of bromine and iodine
 values of, B., 890.
- motor**, chemical stability of, B., 392.
 purity and behaviour of, in engines, B.,
 86.
 Indiana oxidation test for, B., 54.
 used, purification of, B., 1081.
 nitric acid in, B., 484.
 non-freezing, production of, B., 981.
 oxidised, boundary friction of, B., 484,
 837.
 petroleum, dewaxing of, (P.), B., 793, 838.
 Russian, B., 889.
 synthetic, (P.), B., 759.
 non-carcinogenicity of, B., 179.
 used, determination of ash of, B., 890.
 testing of, (P.), B., 538.
 analysis of acid sludge from, B., 392.
- Lubrication during metal working**, B., 153.
- Lucerne**, effects of cutting on, B., 326.
 damping-off and failure of, on acid soils,
 B., 167.
 effect of cropping of, on succeeding wheat
 crops, B., 1110.
 ensilage of, B., 326.
 effect of rainfall on total calcium and
 phosphorus in, B., 1110.
 effect of curing on carotene and vitamin-
 A content of, B., 251.
 emulsin from, A., 250.

Lucerne, nitrogen uptake of grass grown with, B., 38.
 absorption of sulphur dioxide by, in relation to leaf injury, A., 1436.
 destruction of vitamin-A in, during curing, B., 332.
 vitamin-C in, A., 670.
 relation of soil acidity to seedling disease of, in Iowa soils, B., 691.
 nutritive value of, B., 285, 1162.
 roots, effect of cutting practices on food reserves in, A., 1177.
 ice formation in, A., 1288.
 analysis of, A., 266.
Lucerne hay, microbiological decomposition of, B., 967.
 decomposition of constituents and spontaneous heating of, B., 521.
 feeding of milch cows with, B., 605.
 effect of injury by sulphur dioxide on feeding value of, for milch cows, B., 1021.
 digestibility of sesamé meal, artichoke silage, and, B., 379.
Lu-jung, B., 1023.
Lumbricus, respiration of, A., 1141.
Lumilactoflavin, synthesis of, A., 94, 359.
 natural and synthetic, A., 359.
Luminescence, duration of, A., 681.
 of minerals excited by X-rays, A., 565.
Luminophores, X-ray, A., 1470.
Luminous preparations, brightness meter for, B., 32.
Lumistadietriol, and its derivatives, A., 1493.
Lumistatetraene, A., 1493.
Lumisterol, A., 617, 1493.
Lungs, histochemistry of fatty granules of, A., 1263.
 action of olive oil on alveolar epithelium of, A., 1263.
 gaseous exchange in, during respiratory pauses, A., 371.
 histamine content of, A., 1422.
 removal of lactic acid in, in physical work, A., 1409.
 deamination by, A., 113.
 phosphovanillin reaction with, A., 647.
 ox-, blood coagulant from, A., 644.
 heparin from, A., 646.
 determination of carbon and silicon in, A., 1396.
Lung-fish, metabolism of, A., 1013.
Lupanine, action of, on blood-sugar and in diabetes, A., 527.
Lupins, utilisation of phosphate fertilisers by mixed sowings of oats, peas, and, B., 966.
 alkaloid content of, A., 133.
 removal of bitterness from seeds of, B., 922.
 digestibility of pigs of ground seeds of, B., 522.
 containing horsetail, ensilage of, B., 971.
 sweet, feeding value of seeds of, for ruminants, B., 875.
 pig-feeding with seeds of, B., 875.
 yellow, alkaloid-free, analysis of, B., 1068.
Lupin alkaloids, A., 97, 133.
Lupinine, extraction of, from *Lupinus palmeri*, and its salts, A., 97.
Lupinus albus, action of infusions of seeds of, on blood-sugar and in diabetes, A., 527.
Lupinus palmeri, alkaloids of, A., 97.
Lupulin, Ukrainian, tar, essential oil, and acids from, B., 933.
Lutecium, atomic nucleus of, A., 1051.
Luteocrescin, biological action of, A., 1032.

Luteosterone-C and -D, constitution of, A., 128.
Luzigenin salts, A., 1254.
Lycopene, isolation of, from *Thiocystis* bacteria, A., 340.
 absorption spectrum of, A., 1189.
 pigment with spectrum of, A., 983.
Lycorine, degradation of, A., 1387.
Lycorineanhydromethine, and its derivatives, A., 1387.
Lycoris, alkaloids of, A., 1387.
Lycylus brunneus, attack of Australian hardwoods by, B., 726.
Lygus pabulinus, ovidical efficiency of insecticides against, B., 423.
Lygus pratensis, control of, in celery, B., 919.
Lymph, changes in lactic acid, protein, and sugar contents of, A., 1261.
 dog's, surface tension of, and blood, A., 105.
 osmotic pressure and protein in, A., 508.
 of peripheral vessels, non-hæmolytic action of, A., 1003.
 thoracic, sulphur content of, A., 378, 1518.
 dog's, galactose in, A., 883.
 lipins in, A., 773.
 vaccine, purification of, by X-rays, A., 899.
 determination in, of fat-soluble ester glycerol, A., 512.
Lymphangitis, tropical, fibrinolytic activity of hæmolytic streptococcus in, A., 384.
Lyochromes, action of light on, A., 235.
 in urine, A., 774.
Lyosorption, theory of, A., 31.
Lysergic acid, and its derivatives, A., 1512.
Lysins, behaviour of, in ultra-violet light, A., 1030.
Lysine, combination of, with fatty acids, A., 966.
d-Lysine, and its benzenesulphonyl derivatives, and their derivatives, A., 101.
l-Lysine, synthesis of peptides of, A., 1416.
d-Lysine anhydride, synthesis of, and its fission by pepsin, A., 965.
 dihydrochloride, A., 966.
Lysolecithin, unimolecular films of, A., 442.
Lysylglutamic acids, synthesis of derivatives of, A., 850.
1-d-Lyxityl-2-hydroxy-5:6-dimethylbenzimidazole, A., 1134.

M.

Macaroni, determination of rancidity in, B., 203.
 detection of egg-yolk and plant lecithin in, B., 427.
Mackerel-egg oil, surface tension of, A., 1012.
Macrosporium commune, physiology of, A., 405.
Magenta series, A., 973.
Magmas, Scottish, comparison of, A., 955.
Magnesia. See Magnesium oxide.
Magnesioferrite, synthesis of, A., 1099.
Magnesite, occurrence of, in Japan, Manchuria, Norway, Russia, and Sweden, A., 469.
 from ores of the Mesabi range, A., 727.
 refractory properties of mixtures of kaolin and, B., 22.
 determination of thermal expansion of, B., 177.
 flotation of talc from, (P.), B., 673.

Magnesium, production of, (P.), B., 193.
 electrothermally, B., 637.
 from Washington magnesite and dolomite, B., 191.
 purification of, (P.), B., 29, 157.
 and its alloys, refining of, (P.), B., 1099.
 for casting, (P.), B., 680.
 and its alloys, surface treatment of, (P.), B., 274.
 casting of, (P.), B., 909.
 and its alloys, (P.), B., 730.
 mould for, (P.), B., 811.
 and its alloys, die-casting of, (P.), B., 680.
 X-ray inspection of castings of, B., 552.
 and its alloys with aluminium, autogenous welding of, B., 808.
 foundry properties of, B., 28.
 isotope shift in spectrum of, A., 799.
 K X-ray spectra of, A., 1292.
 X-ray absorption spectrum of, A., 801.
 vacuum spark spectrum of, A., 271.
 active products from action of α -rays on, A., 803.
 disintegration of, by α -rays, A., 1297.
 collisions of second kind between neon and, A., 274.
 electrochemistry of, A., 169.
 and its alloy with zinc, specific heats of, A., 924.
 thermal expansion of, A., 918.
 vapour pressure and chemical constant of, A., 815.
 vapour, condensation of, (P.), B., 858.
 clean-up of gases by, A., 27.
 solution of, in aqueous salt solutions, A., 587.
 solid solubility of aluminium in, A., 576.
 solid solubility of copper in, A., 576.
 crystal structure of, A., 1450.
 growth of crystals of, A., 285.
 influence of manganese on corrosion of, B., 808.
 coating and cleaning of, (P.), B., 315.
 and its alloys, electrolytic fluoride coatings on, B., 730.
 protection of, against corrosion, (P.), B., 680.
 by oxide layers, B., 413.
 corrosion below discontinuous oxide coatings on, B., 954.
 protective coating of, by electrolysis in sodium silicate and potassium dichromate, B., 105.
 and its alloys, produced by Royal Aircraft Establishment dichromate process, B., 955.
 and its alloys, oxide films on, A., 1469.
 inhibiting nitridation of, (P.), B., 680.
 action of, on solutions of cobalt and nickel sulphates, A., 52.
 replaceability of, by zinc, A., 292.
 effect of, on plant nutrition, B., 116.
 in calves, A., 386.
 resorption and excretion of, A., 1531.
 activation of intestinal phosphatase by, A., 1280.
 effect of X-ray irradiation of pituitary on exchange of, A., 543.
 in blood, A., 1150.
 in blood and cerebrospinal fluid, A., 1005.
 activated, preparation of, for Grignard reagents, A., 1111.
 life period of, A., 1049.
 redistilled, action of, on water and carbon dioxide, A., 312.
Magnesium alloys, A., 291; B., 552; (P.), B., 66, 107, 680.
 manufacture of, (P.), B., 909.
 treatment of castings of, (P.), B., 956.

Magnesium alloys, rolling of, (P.), B., 107.
die lubricant for extrusion of, (P.), B., 274.
modification of mechanical properties of, (P.), B., 909.
protection of, against corrosion, B., 954.
for aircraft, B., 729.
for castings, colorimetric reactions of, B., 905.
for forging, (P.), B., 858.
die-casting, (P.), B., 274.
supersaturated, creep tests on, B., 954.
wrought, mechanical properties of, B., 552.
with aluminium, A., 158; (P.), B., 157, 1099.
 heat treatment of, (P.), B., 236.
 effect of purity on mechanical properties of, B., 729.
 breakdown of solid solution in, A., 1199.
 increasing corrosion-resistance of, (P.), B., 557, 957.
 light from burning of, A., 459.
with aluminium and with zinc, effect of heat treatment on corrosion of, B., 65.
with aluminium and cadmium, A., 1199.
with aluminium and nickel, B., 808.
with aluminium and silver, A., 158.
with aluminium and zinc, age-hardening of, B., 771.
with antimony, miscibility of, with zinc-antimony alloys, A., 292.
with cerium or lanthanum, crystal structure of, A., 151.
with cobalt, B., 808.
with lithium, equilibria in, A., 1455.
with silicon and zinc, A., 926.
with zinc, solid solubility of, in aluminium, A., 576.
Magnesium compounds, deficiency of, in feeding-stuffs, A., 114.
utilisation of, in diet, A., 1154.
action of, on liver-glycogen, A., 399.
deposition of, in tumours, A., 649.
Magnesium boride, action of phosphoric acid on, A., 50.
carbonate, manufacture of, (P.), B., 1092.
 manufacture of heat-insulating materials from, (P.), B., 257.
 determination of, in soils, B., 740.
carbonates, basic, A., 1088.
chlorate, preparation of, A., 714.
perchlorate, use of, as a drying agent, A., 321.
 anhydrous, preparation of, A., 832.
chloride, manufacture of (P.), B., 306.
 band spectrum of, A., 562.
 conductivity and density of mixtures of, with potassium chloride, A., 927.
 internal friction in fused mixtures of potassium chloride and, A., 439.
 equilibria of, with potassium and sodium chlorides and water, A., 448.
 with the sulphate and water, A., 583.
 with the sulphate and potassium chloride and sulphate, A., 168.
dehydration of, with liquid ammonia, B., 723.
hydration of ions of, A., 1072.
hydrolysis of, during drying of its hydrate, B., 99.
oxidation equilibrium of, A., 1323.
action of, on pyrites, B., 225.
effect of, on anaphylaxis, A., 1160.
chromate, dissociation of, A., 179.
chromite, formation of, from chromic oxide and magnesium oxide, A., 944.
deuteride, ultra-violet band spectrum of, A., 427.

Magnesium fluoride, specific heat of, A., 437.
 equilibrium of, with barium fluoride, A., 1077.
 halides, effect of, on p_H of urine, A., 107.
 hydride, ultra-violet band spectrum of, A., 427.
 hydroxide, production of, (P.), B., 1092.
 conductivity of, in aqueous solution, A., 1078.
 crystal structure of ignition products of, A., 17.
 revivification of, from gasoline purification, (P.), B., 900.
 skin-cleansing creams from, (P.), B., 784.
double nitrates of the cerium group, solubilities of, A., 577.
oxide (*magnesia*), production of, from brine, B., 1141.
 and fertilisers, from dolomite, (P.), B., 672.
 and hydrochloric acid, as by-products from carnallite extraction, B., 354.
 and sugar, from molasses and dolomite, B., 823.
 spectrum of, and its isotopes, A., 1188.
 infra-red absorption spectrum of, A., 1444.
 conductivity and decomposition potential of, in fused fluorides, A., 584.
 heat of solution of, in nitric acid, A., 935.
 fused, B., 901.
 crystalline, structure of, A., 1060.
 equilibrium of, with calcium, aluminium, and ferric oxides, B., 547.
 with ferrous oxide and silicon dioxide, A., 447.
 catalytic activity of mixtures of ferric oxide and, A., 44.
 unsoundness of, B., 455.
 degree of hydration of, in dolomitic limes, B., 354.
 manufacture of refractories from, (P.), B., 993.
 active, heat content and lattice structure of, A., 574.
ammonium phosphates, orientation and pyroelectricity of, in gall stones, A., 811.
silicate, base-exchange properties of, in soils, B., 1107.
 basic, production of, (P.), B., 226.
silicates, refractory properties of, B., 768.
sulphate, production of, (P.), B., 355.
 extraction of potassium sulphate and, from polyhalite, B., 946.
 conductivity of, in glycerol-water solution, A., 37.
 diffusion of, A., 443.
 supersaturation and crystal formation in seeded solutions of, A., 26.
 equilibrium of, with calcium and potassium sulphates, A., 1461.
 with sodium sulphate and water, A., 303.
hydrate, dissociation pressure of, A., 302.
 solubility of, A., 25.
 hydrates and double salts of, A., 591.
 determination of, A., 1473.
sulphite, crystal structure of, A., 1450.
thiosulphate, toxicity and fixation in the organism of, A., 119, 896.
Magnesium organic compounds, A., 179, 739.
 electrolytic formation of, A., 827.

Magnesium organic compounds, rates of formation of, and of lithium organic compounds, A., 939.
 cleavage of, A., 619.
 reaction of, with α -bromo-ketones, A., 493.
 with hydroxyazo-compounds, A., 743.
 on salts of hydroxymethylene ketones, A., 609.
 preparation of aldehydes from *N*-disubstituted formamides and, A., 736.
 with phenols, for medicinal use, (P.), B., 124.
 mixed, action of, on aliphatic α -ethylenic ketones, A., 847.
 with esters of organic acids, A., 64.
Magnesium acetylene, A., 1357.
 dialkyls, preparation of, A., 326.
 dimethyl and diethyl, reaction of, with cyclohexene oxide, A., 208.
 ethyl bromide, reaction of, with alkyl trichloromethyl carbonates, A., 471.
 methoxides, A., 966.
 methyl iodide, reaction of, with dioximes, A., 638.
 addition of, to benzylidenepropiophenone, A., 1125.
 phenyl bromide, action of, on α -bromobutyridimethylamide, A., 1357.
 on dichloroiodoaryl compounds, A., 1113.
 with phenyl *p*-toluenesulphonate, A., 734.
 isopropyl chloride, reaction of, with esters of organic acids, A., 64, 845.
Magnesium detection and determination—
 detection of, with alkannin and naphthazarin, A., 837.
 colorimetrically, A., 54.
 determination of, with 8-hydroxyquinoline, A., 186, 719, 1216.
 flash for, A., 1473.
 as magnesium ammonium phosphate hexahydrate, A., 1093.
 microchemically, A., 837.
 as oxalate, A., 1338.
 volumetrically, A., 1216.
 in presence of ammonium salts, B., 21.
 spectroscopically, in duralumin, A., 317, B., 361.
 in milk, colorimetrically, A., 1399.
 in soils, B., 37.
 in soil extracts, B., 164.
 in urine, A., 380.
 volumetrically, in water, B., 48.
 and its alloys, determination in, of zinc, B., 272.
Magnesium ions, ionisation of neon and argon by, A., 1294.
Magnesium ores, separation of, from iron ores, (P.), B., 991.
Magnesium powder, melting of, (P.), B., 414.
Magnesylinroles, action of acetylsalicyl chloride on, A., 1379.
Magnesylypyrrole, reaction of, with ethyl phthalate, A., 627.
Magnets, spectral analysis of chromium-iron alloys for, B., 594.
 metallic oxides for, (P.), B., 1002.
 testing apparatus for steel for, B., 905.
 nickel-aluminium steel for, B., 310.
 permanent, alloys for, (P.), B., 908, 999.
 aluminium-nickel-iron alloys for, (P.), B., 810.
 iron alloys for, (P.), B., 772.
 nickel-cobalt-titanium-iron alloys for, (P.), B., 810.
 treatment of steel for, B., 151.

- Magnets**, permanent, aluminium-nickel-iron, (P.), B., 275, 504.
K. S., B., 29.
- Magnetic balances**. See under Balances.
- birefringence**. See Refraction, double magnetic.
- bodies**, nickel-iron, electrical insulation of, (P.), B., 108.
- cores**, manufacture of, (P.), B., 275, 679.
- permalloy**, manufacture of, (P.), B., 275.
- fields**, motion of electrons in, A., 1294.
- velocity of crystallisation in**, A., 1307.
- interaction between matter and**, A., 427.
- materials**, structure of, B., 158.
- manufacture of**, (P.), B., 911.
- of high permeability**, production of, B., 1001.
- moments**, molecular, determination of, A., 679.
- permeability**, tensor nature of, in anisotropic media, A., 1304.
- properties**, of organic vapours, A., 14.
- reversal nuclei**, A., 1310.
- substances**, adiabatic cooling of, A., 465.
- susceptibility**, effect of frequency on, A., 435.
- chemical applications of**, A., 1311.
- of alloys**, A., 576.
- of liquids and solids**, measurement of, A., 321.
- of molecular compounds in solution**, A., 927.
- of organic crystals**, A., 924.
- Magnetisation**, influence of fibre structure and cooling in magnetic fields on, A., 813.
- thermodynamics of**, A., 435.
- spontaneous**, magnetic coupling of, A., 435.
- Magnetism**, influence of grain size on, A., 687.
- propagation of reversal wave in**, A., 1196.
- after-effect in**, A., 1196.
- Magnetite**, magnetisation of, A., 1309.
- effect of magnetic field on resistance of**, A., 1196.
- transformation of**, at low temperatures, A., 1194.
- Stromboli**, titanic oxide in, A., 468.
- determination of**, in iron ores, B., 951.
- Magnetochemistry**, A., 436, 1197, 1312, 1453.
- of organic compounds**, A., 1116, 1370.
- Magnetometer** for crystal ferromagnetism, A., 1341.
- Magneto-opticanalysis**. See under Analysis.
- Magneto-optic effect**, Allison, A., 149.
- Magnetostriction**, theory of, A., 19.
- Maia squinado**, calcium in circulating fluid of, A., 524.
- Maize**, physiology of germination of, A., 419.
- composition of kernels of**, A., 133.
- yield of**, in crop-rotation experiments, B., 868.
- furfuraldehyde in**, B., 91.
- extraction of lecithin from**, B., 475.
- distribution of nitrogen in**, A., 1549.
- nitrogen in infusions of**, A., 265.
- pigments of**, A., 796.
- relation between yield and pigments in**, A., 267.
- effect of nitrogen fertilisers on protein content of**, harvested for silage, B., 244.
- preparation of white zein from**, A., 268.
- preservation of**, (P.), B., 747.
- Maize**, silage from. See under Silage.
- feeding value of wheat, soya beans, and**, B., 923.
- effect of grinding on digestibility of**, by pigs, B., 971.
- effect of seed disinfectants on**, B., 326.
- Kentucky**, iodine in, B., 1018.
- Maize plants**, growth substances and dwarf growth of, A., 1039.
- effect of adsorbents on growth of**, B., 918.
- response of**, to fertility levels and to seasons, B., 566.
- response of inbred lines and crosses in**, to nitrogen and phosphate fertilisers, B., 166.
- use of sodium nitrate as fertiliser for**, B., 966.
- nutrient intake of**, from undisturbed and flowing nutrients, A., 131.
- absorption of nitrates by**, in the dark, A., 1037.
- solubility of potassium in tissues of**, A., 1549.
- sulphur metabolism of**, A., 553.
- manufacture of paper from leaves and stalks of**, B., 942.
- germs**, extraction of oil from, B., 639.
- chlorotic**, response of, to zinc sulphate applications to soils, B., 742.
- Maize starch**. See under Starch.
- Makhorka**, extraction of citric acid from, B., 124.
- fractionation of resins of**, A., 133.
- determination in**, of citric and malic acids, A., 133.
- See also *Nicotiana rustica*.
- Malachite**, banded, formation of Liesegang bands resembling, A., 445.
- Malachite green**, decolorisation of, by sodium hydroxide, A., 1466.
- derivatives**, absorption spectra of, A., 1052.
- photochemical decomposition of**, B., 1090.
- indicator transformations of**, in alkaline solutions, A., 462.
- Malaria**, blood-serum in, A., 1394.
- iron flocculation in**, A., 1402.
- pigment of**. See Hamozoin.
- chemotherapy of**, A., 1527.
- serum changes in therapy for**, A., 776.
- treatment of**, with atebirin, A., 1149.
- Maleic acid**, refining of, (P.), B., 442.
- and its methyl ester**, heat of sublimation of, A., 436.
- and its salts**, action of ultra-violet light and platinum on, A., 178.
- multiple condensation of fumaric acid and**, with ethylene glycol, A., 474.
- esters**, use of, as plasticisers for cellulose esters, (P.), B., 642.
- Maleic acid**, dihydroxy-, diethyl ester, titration curves and dissociation constants of vitamin-C and, A., 1460.
- Maleic anhydride**, manufacture of, from crude acid, (P.), B., 620.
- condensation of**, with 5-methyl-2-isopropyl furan, A., 1245.
- with phenylhydrazones**, A., 1489.
- addition of**, to cyclopentadiene and cyclohexadiene, and isomerism of their adducts, A., 211.
- additive product of**, with caryophyllene, A., 351.
- action of**, on aldehyde-amines, A., 491.
- on diphenylisobenzofuran**, A., 1377.
- Maleonitrile**, A., 737.
- structure and properties of**, A., 738.
- ultra-violet absorption spectrum of**, A., 563.
- Malic acid**, calcium salt, colloidal, manufacture of, (P.), B., 829.
- Malic acid**, ethyl hydrogen ester, A., 1231.
- determination of**, in tobacco and makhorka, A., 133.
- d- and l-Malic acids**, activation of r-tartaric acid by, A., 731.
- Mallophen**, gonococcicidal action of, in urine, A., 1170.
- Mallow**, Indian, A., 1435.
- Malonic acid**, distribution of, between water and aliphatic alcohols, A., 929.
- condensation of**, with aldehydes in presence of organic bases, A., 353, 626, 961.
- with salicylaldehyde**, A., 626.
- reaction of**, with metallic hydroxides, A., 449, 1077.
- esters**, alkylation of, A., 64.
- cetyl and nonyl esters**, A., 730.
- ethyl ester**, and its derivatives, hydrogenolytic fission of, A., 607.
- condensation of**, with salicylaldehyde, A., 961.
- ethyl hydrogen ester**, oxidation of, by potassium persulphate, A., 731.
- derivatives**, plasticisers for cellulose acetate from, (P.), B., 367.
- Malonic acid**, bromo-, salts, velocity of reaction of, with thiosulphates, A., 1207.
- dibromo-**, velocity of formation of carbon dioxide from, A., 709.
- nitro-**, methyl ester, nitronic methyl ester of, A., 334.
- Malononitriles**, cleavage of, A., 619.
- Malt**, stable preparation of, (P.), B., 77.
- manufacture of**, apparatus for, (P.), B., 824.
- chemical changes in**, during kilning, B., 649.
- degree of solubility of**, B., 970.
- hordein in**, B., 744.
- proteins in barley and**, B., 779.
- modification of proteins of**, B., 424.
- formol-titratable protein-hydrolysis products of**, B., 1112.
- judging degree of modification of**, B., 40.
- green**, extraction of diastase from, by sodium chloride, B., 695.
- determination of diastatic power in**, B., 519, 779.
- barley**, protein and diastatic power in, B., 744.
- determination of diastatic power of**, with potassium ferriocyanide, B., 519.
- evaluation of**, B., 569.
- by formol-protein number**, B., 519.
- analysis of**, by British and Continental methods, B., 169.
- Malt extract**, determination of, by washing out spent grain, B., 120.
- Maltase**, activity of, in taka-diastase, A., 1535.
- determination of**, photometrically, A., 249.
- Mating**, rôle of enzymes in, B., 76.
- preparation for use in**, (P.), B., 332.
- disinfectants for use in**, B., 203.
- Maltose derivatives** with ortho-ester structure, configuration and hydrolysis of, A., 609.
- absorption of**, by organs, A., 240.
- determination of**, gravimetrically, A., 1485.
- in presence of sucrose and monoses**, A., 609.
- α -Maltosides**, synthesis of, and their behaviour with diastase, A., 848.
- Malus malus**. See Apple trees.

- Mammary glands**, alkaline phosphomonoesterase of, A., 1164.
 action of menformone on, A., 542.
 synthesis of lactose by, A., 1151.
 human, ante- and post-natal secretion of, A., 773.
 of male mice, effect of œstrin on, A., 413.
 of monkeys, effect of galactin and theelin on, A., 1426.
 of rat and mouse, iron in, A., 234.
- Mandarins**, vitamin-C in, B., 171.
- Mandelic acid**, photochemical oxidation of, by methylene blue with uranyl nitrate, A., 1211.
 mercuric salt, A., 997.
- r-Mandelic acid**, resolution of, with (—)-ephedrine, A., 1494.
- Mandelic acid**, o-amino-, and o-nitro-, and their derivatives, and o-hydroxy-, A., 356.
- Manganates**. See under Manganese.
- Manganese**, occurrence and determination of, in sea water, A., 464.
 extraction of, from manganosiderite ores, (P.), B., 908.
 recovery of, from its ores, (P.), B., 414, 452.
 from oxide ores, (P.), B., 274.
 spectrum of, A., 1045.
 arc spectrum of, A., 136.
 K X-ray emission spectra of, in its compounds, A., 1184.
 Stark effect in, A., 801.
 separation of, on mercury cathodes, A., 597.
 adsorption by, of ionium, A., 28.
 colloidal solutions of, for therapeutic use, (P.), B., 381.
 catalytic action of, on aldehyde oxidation, A., 1084.
 influence of, on corrosion of magnesium, B., 808.
 in plants, A., 266.
 in plants and soils, A., 266.
 effect of, on plant growth, B., 73.
 in diet of animals, A., 654.
 in diet of children, A., 654.
 toxicity of, in excess, A., 781.
 fixation of, in intoxication by manganese dioxide, A., 1533.
 amorphous, magnetic properties of, A., 573.
- Manganese alloys** with aluminium and tin, A., 439.
 with copper, iron, and nickel, A., 927.
 with iron, irreversible, transformations in, A., 1314.
 with mercury and tin or zinc, A., 23.
 with nickel, A., 576.
 with palladium, A., 576, 1456.
 with silicon, A., 23.
- Manganese compounds**, dehydration and thermal decomposition of, A., 314.
- Manganese salts**, line absorption spectra of, A., 679.
 physiological action of, A., 781.
- Manganese arsenide**, crystal structure of, A., 920.
 carbonate, thermal decomposition of, A., 1090.
 chlorides, A., 716.
 sesquioxide, hydrate and allotropic forms of, A., 181.
 dioxide, manufacture of, (P.), B., 948.
 colloidal, reduction of, A., 1208.
 sols, migration in, A., 821.
 mutual coagulation of ferric oxide sols and, A., 164.
 catalytic oxidation of carbon monoxide on, A., 941, 942.
- Manganese dioxide**, for dry cells, B., 507.
 poisoning by. See under Poisoning.
 active, adsorption and catalytic properties of, A., 160.
 African, effect of p_H on potential of, A., 1325.
 oxides, A., 946.
 action of heat on, A., 314.
 phosphide, crystal structure of, A., 920.
 silicate, synthesis of, A., 583.
 equilibrium of, with iron sulphide, A., 1077.
- Manganous salts**, magnetic properties of, A., 436.
 paramagnetism of ions in aqueous solutions of, A., 814.
 catalytic action of silver on oxidation of, by persulphates, A., 309.
 precipitation of, with aqueous ammonium sulphide, A., 186.
 detection in, of rhodium, A., 838.
- Manganous chloride**, complex formation of, with tartaric acid, A., 961.
 hydroxide, autooxidation of, A., 834.
 See also Bäckströmite and Pyrochroite.
 oxide, effect of temperature on lattice constants of, A., 1307.
 equilibrium of, with calcium oxide and silica, A., 583.
 determination of, in steel, B., 499.
 sulphate, oxidation of, by hydrogen peroxide in alkaline solution, A., 181.
 ammonium sulphate, entropy of, in relation to magnetic anisotropy, A., 1198.
- Manganic chloride**, decomposition of, in presence of complex metal catalysts, A., 1466.
- Manganates**, determination of permanganates and, A., 55.
- Permanganic acid**, decomposition of, A., 716.
 in acid media, A., 1090.
 reaction of, with oxalic acid, in presence of sulphuric acid, A., 1084.
- Permanganates**, titrations with alkaline solutions of, A., 55.
 determination of titre of solutions of, with calcium carbonate, A., 318.
- Manganese organic compounds**:—
Manganese salts, of carboxylic acids, production of, (P.), B., 1166.
Manganous compounds, complex, with amino-acids, proteins, etc., A., 1460.
Manganous ethoxide, A., 1349.
- Manganese detection**, determination, and separation:—
 detection of, colorimetrically, A., 55.
 colorimetrically, with formaldoxime, A., 951.
 determination of, A., 55.
 by persulphate-arsenite method, B., 854.
 volumetrically, A., 838.
 with ferricyanides, A., 1094.
 by oxidation, A., 1094.
 in duralumin, spectroscopically, A., 317; B., 361.
 in presence of iron, by bromate and hexamethylenetetramine methods, A., 318.
 in steel, spectrophotometrically, B., 272, 1047.
 volumetrically, with diphenylamine, B., 64.
 in tungsten steel, electrometrically, B., 64.
 separation of, from titration, by means of hydrogen peroxide, A., 1339.
 from aluminium, A., 1338.
- β-Manganese**, Wiedemann-Franz number of, A., 288.
 α-, β-, and γ-Manganese, electrical and magnetic properties of, A., 19.
- Manganese bronze** and brass, B., 361.
- Manganese ores**, concentration of, (P.), B., 595.
 Nikopolsk, sintering of, B., 27.
 of S.E. Poland, B., 153.
- Manganite**, structure of, A., 1060.
 crystal structure of, A., 286.
- Mangels**, sulphuric acid treatment of seeds of, B., 968.
 determination of dry matter in, B., 285.
- Mania**, folliculin elimination in, A., 1010.
- n- and iso-Mannides**, fate of, in the body, A., 1151.
- Mannitol**, A., 194.
 effect of zirconium salts on rotation of, in water, A., 1072.
 electro-reduction of complexes of ferric iron and, in alkaline solutions, A., 1462.
 diacetate dibenzoate and dibenzoate di-p-toluenesulphonates, A., 194.
 food value of, A., 112.
 determination of, polarimetrically, A., 844.
- Mannitol-dimolybdic acid**, A., 959.
- Mannitol-α-glucoside**, A., 1485.
- Mannocarolose**, structure of, A., 477.
- d-α-Mannoheptose**, hexaacetates and ethyl mercaptal, A., 69.
- Mannonic acid**, lead salt, A., 732.
- Mannose**, synthesis of vitamin-C from, by tissues, A., 416.
 pentaacetates, preparation of, A., 68.
- d-Mannose**, preparation of, crystalline, A., 477.
 diphenylhydrazone, A., 849.
- β-Mannosyliminocrotonic acid**, ethyl ester, A., 1108.
- d-Mannuronic acid**, and its derivatives, preparation of, A., 732.
- Manoenes**, A., 351.
- Manometers**, A., 467.
 for small pressure differences, A., 840.
 absolute improved, A., 952.
 electric, for high pressures, A., 58.
 glass laboratory, A., 1219.
 mercury, six-atmosphere, A., 599.
 recording, low-inertia, A., 600.
- Manool**, and its derivatives, A., 1127.
- Manostat**, manometric, A., 840.
- Manoyl oxide**, constitution of, and its dehydrogenation and oxidation, A., 351.
- Manures**, manufacture of, from sewage sludge, (P.), B., 480.
 relationships between plant growth, soils, and nutrient ratios of, B., 1109.
 carbon dioxide as, B., 689.
 use of charcoal as, B., 165.
 hop residues as, B., 689.
 artificial, decomposition of straw in production of, B., 514.
 compost, B., 602.
 farmyard, silo-fermentation of, B., 515.
 biological decomposition of, in arable soils, B., 964.
 comparative efficiency of fertilisers and, B., 37, 515.
 artificial, B., 778.
 fresh, negative action of, on crops, B., 37.
 green, crops for, B., 567.
 application of, B., 373.
 liquid, action of, on grassland, B., 689.
 determination in, of potassium, B., 514.
 moist and dried, action of, on crops, B., 37.
 organic, B., 1158.
 comparison of, B., 866.

- Maures**, stable, humus production from, B., 1107.
 stall, composition of, B., 73.
 weed seeds in, B., 741.
 effect of Kranz treatment on, B., 968.
 treatment of, B., 866.
 hot-fermentation of, B., 324.
 nitrification of, in arable soils, B., 324.
 rate of decomposition and loss of nitrogen in, B., 741.
 rotting of, B., 471.
 preparation and rotting of, B., 324.
 ordinary and fermented, B., 165.
 See also Fertilisers.
- Maple**, production of concentrated flavour of, (P.), B., 694.
- Maple sap**, composition of, A., 550.
- Maple syrup**, treatment of, to obtain large crystals of sugar, (P.), B., 694.
 ropiness of, caused by *Aërobacter aërogenes*, B., 603.
- Marasmus**, enzootic, iron in kidney, liver, and spleen in, A., 108.
- Marble**, artificial, manufacture of, (P.), B., 806, 903.
- Margarine**, manufacture of, (P.), B., 252, 380, 1050.
 determination of stability and type of emulsions for, A., 297.
 substitutes for egg yolk in, B., 1161.
 spoilage of, B., 363.
 nutritive value of butter and, A., 653.
 detection of, by vacuum ester process, B., 364.
 in foods, B., 159.
 use of acid wort in detection of yeasts and mould fungi in, B., 68.
- Margarite**, analysis of, A., 1220.
- Marguerites**, apigenin from, A., 673.
- Marmalade**, preservation of surface of, B., 698.
 microscopy of, B., 378.
 fruit, analyses of, B., 1020.
 determination in, of sucrose, invert sugar, and starch syrup, B., 202.
- Marmot**, adrenal insufficiency in, A., 1421.
- Marrubiin** in *Labiata*, A., 268.
- Marshes**, salt, ecology of, A., 1281.
 of north-east U.S.A., ecology of, A., 671.
- Martensite**, X-ray study of formation and decomposition of, B., 457.
 structure of, in steel, A., 1060.
 transition of austenite into, B., 151.
- Marzipan**, invert sugar in, B., 375.
- Masonry**, waterproofing of, B., 592.
- Mass**, band spectra measurement of, A., 144.
 equivalence of energy and, A., 143.
 electromagnetic and material, difference between, A., 1443.
- Mass action**, law of, A., 702, 1076.
 kinetic derivation of, A., 1082.
 cartesian nomogram for, A., 1219.
- Masseccutes**, crystallisation apparatus for, (P.), B., 977.
 apparatus for treatment of, (P.), B., 970.
 beet sugar, working of, with rapid cooling
 Werkspoor crystallisers, B., 870.
 low-grade, B., 518.
 preparation of, for purging by dilution or heating, B., 692.
- Mastitis**, field and laboratory tests for, A., 516.
- Mats**, coconut-fibre, printing of. See under Printing.
- Matairesinol**, and its derivatives, A., 860.
- Matches**, composition for heads of, (P.), B., 1119, 1167.
 waterproof, (P.), B., 383.
- Maté**, composition of, B., 428.
 tannin in, B., 476.
- Materials**, heat treatment of, by gases in rotary retorts or drums, (P.), B., 530.
 low-temperature treatment of, (P.), B., 1076.
 drying and heating of, (P.), B., 49.
 comminution of, (P.), B., 386.
 volatilisation of, (P.), B., 1025.
 of different density, separation of, (P.), B., 210, 481, 1075.
 dry, separation of, (P.), B., 210.
 finely-divided, separation of, (P.), B., 578.
 granulation of, (P.), B., 531.
 apparatus for sintering of, (P.), B., 385.
 apparatus for classification of, (P.), B., 83.
 mixed, separation of, (P.), B., 1075.
 natural, interplanar spacings in, A., 1195.
 pulverulent, apparatus for moistening of, (P.), B., 786.
 apparatus for disintegration, mixing, and screening of, (P.), B., 754.
 mixing of, (P.), B., 434.
 soft, crushing, grinding, and sifting of, (P.), B., 338.
 testing of, B., 257.
 pipette method for determination of grain size of, B., 609.
 determination of grain-size distribution in, from centrifuge experiments, B., 785.
- Matric acid**, potassium salt, distillation of, with soda-lime, A., 766.
- Matrine**, constitution of, A., 766, 1574.
 identity of, with sophocarpidine, A., 635.
 dehydrogenation of, A., 766.
- Matter**, electrical device for determination of structure of, (P.), B., 596.
 changes of, and their arrest, A., 432.
- Mallencia orientalis*, constituents of, A., 91.
- Maucherite**, two-dimensional lattice of, A., 918.
- Maxorochni seeds**, determination of fat in, B., 1101.
- Mayonnaise**, stabilisation of, by egg yolk, B., 1162.
 testing of mustard for, B., 251.
- Mayorella palestinesis*, culture of, A., 1166.
- Mazouts**, determination of f.p. of, B., 391.
- Meadows**, manuring of, in Quartino, Tessin, B., 602.
 action of basic slag on, B., 566.
 influence of irrigation with potash-factory effluents on, B., 1109.
 high-moor, influence of cutting time on yield of, and nutrient content of the hay, B., 1061.
 potassium requirement of, B., 324.
- Meal-worms**, chemistry of metamorphosis in, A., 889.
 3:4-dihydroxyphenylacetic acid from, A., 646.
 water content and oxygen consumption of, A., 652.
- Mealy bugs**. See under Bugs.
- Mexican**. See *Phenacoccus gossypii*.
- Measles**, blood-phosphorus in, A., 519.
 dosage of placental globulin in prophylaxis of, A., 1395.
- Meat**, colloid-chemical properties of, B., 285.
 proteins of, B., 571.
 water in, B., 476.
 extraction of soluble substances from, during cooking, B., 746.
 removal of grease from, (P.), B., 959.
 curing of, (P.), B., 123.
- Meat**, effect of curing solutions on anaërobic bacteria in, B., 331, 476.
 liquids for smoking of, B., 698.
 preservation of, (P.), B., 123, 876.
 during transport and storage, (P.), B., 1067.
 post-mortem and refrigeration changes in, B., 571.
 treatment of wastes from packing of, B., 1168.
 effect of storage on acid-base coefficient of, A., 105.
 in human diet, A., 652.
 canned, effect of p_H on formation of ferrous sulphide in, B., 1020.
 chilled, growth of moulds on, B., 604.
 effect of air movement on, B., 698.
 of domestic fowl, composition of, B., 331.
 home-canned, changes in fat of, B., 250.
 preserved, production of, B., 652.
 analytical control of, B., 571.
 detection of adulterants for reddening of, B., 971.
 determination in, of nitrates, B., 604.
 of nitrates and nitrites, B., 1020.
- Meat extracts**, production of, from seals, whales, etc., (P.), B., 523, 605.
 differentiation of yeast extract and, B., 427.
- Meat juices**, determination of p_H of, B., 43.
- Meat meal**, analysis of, B., 1115.
- Meat products**, colouring material for, (P.), B., 205.
 determination in, of nitrates and nitrites, B., 1020.
- Mechanics**, quantum. See Quantum mechanics.
- Mechanical moments**, nuclear, distribution of, A., 676.
- Mediastinum**, cyanosis from compression of, A., 381.
- Medicaments**, changes in p_H of, B., 478.
 protection of, from action of gastric juices, (P.), B., 750.
- Medicinal oils**, blended fish oils for, B., 1163.
 preparations, production of, (P.), B., 749.
 fermented, manufacture of, (P.), B., 284.
 solidified, production of, (P.), B., 701.
 determination in, of silver, B., 654.
- Medicine**, chemistry in, B., 748.
 and colloid chemistry, A., 380.
 mediæval practices in, B., 700.
 use of colloids in, B., 1163.
 social, application of emission spectral analysis to, A., 235.
- Medicines**, particle size and degree of dispersion of, B., 523.
 thermal analysis and eutectics of mixtures of, B., 923.
 Indian, inorganic preparations of, B., 828.
- Medlars**, vitamin-C in, A., 1546.
- Melamine**, and its salts and derivatives, A., 1382.
- Melandrium album*, sex reversal of, by a fungus, A., 1181.
- Melanin**, indicators replacing, in the Henry reaction, A., 1149.
 diagnosis of paludism by, A., 656.
- Melanins**, absorption spectra of, A., 896.
- Melanoplus differentialis*. See Grasshoppers.
- Melanuria**, human, chromogen of, A., 235.
 β -Melibiose heptaacetate, A., 848.
- Melilotic acid**, detection and determination of, colorimetrically, A., 1435.
- Melilotus*, detection in, of coumarin and melilotic acid, A., 1435.

- Melitura**, exogenous, in man, A., 240.
Melleic acid, and its derivatives, A., 619.
Mellitic acid, substitution-syntheses of, A., 1497.
Melons, water-. See Watermelons.
Melts, crystallisation of, A., 811, 1449.
Melting point, law of, and lattice binding, A., 1305.
determination of, by capillary tube method, A., 57.
industrial importance of, and apparatus for its determination, A., 839.
Melting-point apparatus, A., 56, 57, 465, 721.
for organic compounds, A., 598.
Membranes, structure and permeability of, A., 1071.
albumin, A., 1071.
animal, effect of amines on permeability of, A., 639.
cellophane, permeability of, to dry or moist air, A., 578.
filtration of aqueous electrolytes through, A., 578.
for ultrafiltration, A., 1342.
cellophane and collodion, electro-osmotic velocities through, A., 578.
cellophane and cuprophane, for dialysis and electrodialysis, A., 467.
cellulose, formation and structure of, A., 1541.
collodion, preparation of, of varying permeability, A., 1099.
colloidal, preparation of, and their use in filtration of viruses, A., 257.
metallic, A., 931.
protoplasmic, and phosphatide auto-complex coacervates, A., 1321.
sac-, semipermeable, preparation of, A., 554.
Memorial Lectures, Hurter, B., 225.
Mendozite, occurrence of, in Missouri, A., 1345.
Mentformone, effect of, on eye-pressure, A., 667.
on lacteal glands, A., 542.
* on mucosa separation in genital apparatus, A., 542.
Meningitis, chlorides in, A., 516.
bactericidal action of blood in, A., 1421.
reaction of cerebrospinal fluid in, A., 517.
tuberculous, blood-phosphorus in, A., 519.
Menisidine, and its derivatives, A., 1433.
Menisine, and its derivatives, A., 1433.
Menstruation, androkinin and folliculin in excreta during, A., 413.
copper in blood in, A., 643.
surface tension of urine in, A., 385.
"Menstruation poisons" in human milk, A., 647.
Mental disease, bromine in the organism in, A., 1518.
tyrosine index of polypeptidæmia in, A., 1149.
Mental fatigue, blood p_H and nitrogen exchange in, A., 109.
1:2-Menthanediol, A., 1245.
 Δ^1 -Menthen-2-ol-3-glyoxylic acid, and its 2:4-dinitrophenylhydrazone and lactone, A., 755.
Menthol, equilibrium of, with phenacetin and antipyrine or urethane, A., 1078.
 dl -Menthol, resolution of, A., 89.
 d -neisoMenthol, and its derivatives, A., 349.
Menthols, relative molecular configurations of, A., 88.
Menthoglycuronic acid, synthesis of, in arsenic poisoning, A., 1533.
influence of diet on, A., 1530.
influence of phosphorus poisoning on, A., 1533.
Menthone, rotatory dispersion of, A., 809.
 m -nitrobenzhydrazide, A., 743.
Menthone series, A., 88.
1-Menthoxycetic acid, 1-*trans*-1:2-cyclohexane ester, A., 1494.
2-Menthylacetic acid, and 2-hydroxy-, and their derivatives, A., 88.
Menthylamines, relative molecular configurations of, A., 88.
1-Menthylaminoacetic acid, and its menthyl esters, and their derivatives, A., 89.
4-Menthyl-*m*-cresol, A., 614.
 γ -2-Menthyl- $\alpha\alpha$ -dimethylpropyl alcohol, A., 88.
 β -2-Menthylethyl alcohol, and its bromide, A., 88.
 β -2-Menthylethyl methyl ketone, and its 2:4-dinitrophenyl hydrazone, A., 88.
 β -2-Menthylethylmethylmalonic acid, ethyl ester, A., 88.
2-Menthylideneacetic acid, ethyl ester, A., 88.
 δ -2-Menthyl- β -methylbutenes, A., 88.
 γ -2-Menthyl- α -methylbutyric acid, and its *p*-toluidide, A., 88.
 β -2-Menthylpropionic acid, derivatives of, A., 88.
Menuke oil, constituents of, B., 733.
Mercallite from fumarolic products of Vesuvius, A., 1220.
Mercaptals, condensation of, with 5-keto-methylpentonic acids, A., 497.
aromatic, reaction of, with formaldehyde, A., 970.
Mercaptans, addition of, to ethylenic linkings, A., 975.
addition of hydrogen sulphide and, to alkylene oxides, A., 729.
varying valency of platinum in its compounds with, A., 182.
removal of, from naphtha, B., 887.
determination of, in hydrocarbon solvents, B., 484.
Mercaptobenzthiazole. See Benzthiazole, thiol-.
Mercerisation, (P.), B., 848.
value of assistants in, B., 626.
wetting agents for, (P.), B., 59.
dialyser for alkali waste liquors from baths for, B., 19.
of cellulose fibres, (P.), B., 450.
of cotton at low temperatures, B., 401.
of cotton threads or fibres, (P.), B., 19.
of rayon fabrics, B., 302.
determination of degree of, B., 989.
iodometric control of, B., 303.
Mercurials. See Mercury organic compounds.
Mercurialis perennis, soluble sugars in, A., 1180.
Mercuridimethoxyphenylbutane, dichloro-, A., 1515.
3-Mercuri-5-ethyl- β -resorcylic acid, 3-hydroxy-, A., 1364.
Mercurimethanesulphonic acid, diiodo-hydroxy-, sodium salt, A., 1222.
 α -Mercuri- β -methoxy- $\alpha\beta$ -diphenylethane, α -chloro-, A., 1515.
1-Mercuri- α -methoxycyclohexane, 1-chloro-, A., 1515.
Mercurimethoxyphenylbutene, bromo-, and chloro-, A., 1515.
 α -Mercuri- β -methoxy- β -phenylethane, α -bromo-, A., 1515.
 β -Mercuri- α -methoxy- α -phenylpropane, β -chloro-, A., 1515.
Mercurimethyl-1:2-dihydrobenzofurans, hydroxy-1-chloro-, A., 1233.
1-Mercurimethyl-1:4-dimethyl-1:2-dihydrobenzofuran, 1-bromo-, and 1-iodo-, A., 484.
1-Mercurimethyl-1-methyl-1:2-dihydrobenzofuran, 1-chloro-, A., 484.
Mercuriphenols, nitrochloro-, A., 1139.
Mercurochrome, B., 254.
toxicity of, A., 1421.
Mercury, atomic wave function of, A., 912.
atoms, collisions of electrons with, A., 1294.
energy exchange of, with walls, A., 912.
molecules, formation of, A., 917.
isotopes, A., 6, 1295.
dry purification of, A., 944.
mechanical dispersion of, A., 700.
spectrum of, A., 272, 424.
filters for isolation of lines in, A., 1097.
energy levels in, A., 1292.
emission and absorption from metastable level in, A., 1438.
hyperfine structure in, A., 1438.
effect of heat on intensities in, A., 1292.
Zeeman effect in, A., 3, 272, 1438.
influence of added gases on absorption spectrum of, A., 138.
arc spectrum of, A., 137.
Zeeman effect in, A., 137.
band spectrum of, A., 3.
fluorescence band spectrum of, A., 800.
explosion and arc spectra of, A., 3.
infra-red spectrum of, A., 1292.
L X-ray spectrum of, A., 676, 800.
ultra-violet spectrum of, A., 1045.
spectrum of quartz arcs in, A., 800.
luminescence of, when shaken in neon, A., 147.
Stark effect for, A., 908.
relation between electron field emission and work function of, A., 1184.
effect of hydrogen on self-reversal of resonance line of, A., 272.
effect of cadmium on temperature of electric arc in, A., 272.
superconductivity of, A., 20.
liquid and solid, structure of, by means of cathode-ray diffraction, A., 922.
visual demonstration of evaporation of, A., 724.
vapour, spectrum of, A., 1184.
continuous spectra of, A., 424.
fluorescence spectrum of, A., 3, 138.
high frequency spectrum of, A., 1184.
change of electron temperature in afterglow of, A., 1439.
effect of hydrogen on afterglow in, A., 138.
electron scattering in, A., 1439.
effect of, on spectra of alkali metals, A., 1.
properties of high-pressure discharges in, A., 676.
radiation from discharge in, A., 137.
effect of magnetic fields on discharge density of, A., 1046.
absorption of, by active carbon, B., 752.
respirator adsorbent for, (P.), B., 1072.
condensation phenomena in, A., 275.
action of, on calcium, A., 312.
adsorption of gases on, A., 818.
surface and interfacial tension of, A., 160.
multimolecular layers between, and solutions, A., 697, 1070.
interfacial tension at interface of mercurous sulphate solutions and, A., 442.
diffusion of, on tin, A., 578.
crystals, mechanical behaviour of, A., 288.

Mercury crystals, diamagnetism of, A., 287.
 velocity of elastic waves in, A., 690.
 expansion coefficients of, A., 1454.
 emulsions, prepared by ultrasonic waves,
 influence of gases on, A., 820.
 sols, preparation of, by reduction, A., 1318.
 reaction of, with sulphur sols, A., 1320.
 replacement of metals in organic compounds by, A., 506.
 reaction of, with diselenodicarboxylic acids, A., 962.
 separation of, from solutions by organic reducing agents, A., 591.
 use of, in boilers, (P.), B., 531.
 boilers for, (P.), B., 386, 908, 977, 1121.
 vertical boilers for, (P.), B., 1027.
 cleaning of boilers for, (P.), B., 435*.
 cistern for, A., 1218.
 protection against risks in use of, in laboratory apparatus, B., 479.
 seed disinfectants from, B., 1159.
 absorption and distribution of, in animals, A., 247.
 electrically-exploded, spectrum of, A., 908.
Mercury alloys (amalgams), A., 23, 291.
 theory of formation of, B., 64.
 centrifugal machines for production of, (P.), B., 1099.
 structure viscosity of, A., 927.
 action of active nitrogen on, A., 945.
 with alkali metals, electrolytic cells for production of, (P.), B., 237.
 with ammonium, electrochemistry of, under pressure, A., 826.
 decomposition of, A., 173.
 with barium, production of, A., 180.
 with copper with γ -brass structure, A., 920.
 with indium, for dentistry, (P.), B., 858.
 with lithium, A., 1314.
 X-ray analysis of, A., 1455.
 with potassium, thermodynamics of, A., 170.
 with silver, tin, or zinc, B., 500.
 with silver, with tin, and with zinc, electrosynthesis and structure of, A., 1330.
 with sodium, liquid, colloidal nature of, A., 295.
 containing iron, A., 590.
 with sodium and with thallium, surface tension of, A., 811.
 with thallium, A., 440.
Mercury bases:—
 Diamminomercuric chloride, crystal structure of, A., 152.
 Mercuriammonium chromate, A., 1039.
 salts, action of, with potassium cyanide, A., 714.
 sulphites, A., 1469.
Mercury compounds, effect of, on tissue cultures, A., 1413.
 determination in, of iodine, A., 595.
Mercury hydride, band spectrum of, A., 908, 1184.
 oxyiodide, A., 592.
 silver iodide. See under Silver mercury iodide.
 chloromanganate, crystal structure of, A., 1061.
 sulphate sulphide, preparation and analysis of, A., 945.
 tellurate, compound of, with the oxide, A., 459.
Mercuric bromide, preparation of, A., 715.
 chloride, crystal structure of, A., 285.
 vapour, highly-attenuated flames of potassium vapour and, A., 708.
 equilibria of, with the bromide, A., 35.
 with lead chloride, A., 1204.

Mercury:—
 Mercuric chloride, reaction of, with ethyl diazoacetate, A., 202.
 compound of, with camphor, A., 1461.
 determination of, volumetrically, with lead sulphide, B., 628.
 iodide, reactions of, A., 459.
 action of, on alkaline-earth bases and silver oxide, A., 459.
 with phenols in alkaline solution, A., 615.
 action of alkali hydroxide solutions on, A., 714.
 photochemical reaction of alkaline bases on, A., 458.
 action of cyanogen compounds on, A., 459.
 orange, A., 1089.
 oxide, preparation of, B., 723.
 photo-conductivity in, A., 282.
 red and yellow, analytical distinction of, A., 1474.
 Mercurous salts, Raman effect and complexity of, A., 11.
 Mercurous chloride, magnetic properties of solutions of, A., 1003.
 crystal condition of, A., 570.
 detection of metals with, A., 53.
 nitride, A., 945.
 Iodomeric acid, A., 592.
Mercury organic compounds, A., 997.
 manufacture of, (P.), B., 333, 655, 1165.
 with aromatic amines and phenols, preparation of, A., 1139.
 with camphor, A., 755.
 with diphenylphenolphthalein, (P.), B., 175.
 with hydroxyaryl sulphides, for bactericides, (P.), B., 1119.
 with 4-hydroxy-2-thion-1:2:3:4-tetrahydroquinazoline, A., 1253.
 with isatin, manufacture of, (P.), B., 206.
 with nitro-*o*-cresol, (P.), B., 175.
 with nitro-*p*-cresols, for bactericides, (P.), B., 1165.
 with quinine, for treatment of syphilis, (P.), B., 1165.
 antiseptic and germicidal properties of, A., 1161.
 aromatic, manufacture of, for cosmetics, detergents, and germicides, (P.), B., 974.
 asymmetric, synthesis of, A., 768.
Mercury alkyls, A., 202, 333.
 Raman spectra of, A., 681.
 alkyls and aryls, absorption spectra of, A., 563.
 benzyl *p*-chlorophenyl, methyl α -naphthyl, phenyl ethyl, phenyl methyl, and phenyl nitrophenyls, A., 768.
 diaryls, reaction of, with diarylselenium dihalides, A., 1515.
 diisobutyl, preparation of, A., 967.
 3-di-*p*-cymyl, A., 1390.
 dimethyl, photo-dissociation of, A., 1468.
 dimethyl and methyl bromide and iodide, photo-dissociation of vapours of, A., 1052.
 dithiophthienyl, A., 1249.
 Mercuric phenyl nitrate, bactericidal and germicidal powers of, B., 527.
Mercury detection, determination, and separation:—
 detection of, A., 55, 318, 950.
 in bullet wounds, A., 247.
 in foods and toxicology, B., 284.
 detection of carbon, hydrogen, and, in organic compounds, A., 876.

Mercury detection, determination, and separation:—
 determination of, A., 186, 950, 1474.
 with benzidine, A., 597.
 microchemically, A., 464.
 potentiometrically and volumetrically, A., 837.
 volumetrically, A., 838, 950.
 in biological material, A., 1182.
 in presence of lead with anthranilic acid, A., 720.
 in mercury-chalk preparations, B., 253.
 in iodinated organic mercury compounds, B., 1068.
 determination and separation of, A., 720.
Mercury cathodes. See under Cathodes.
Mercury electrodes. See under Electrodes.
Mercury ions, accommodation coefficient of, on mercury surfaces, A., 425.
 liberation of electrons from molybdenum by, A., 1047.
 high-velocity, A., 5.
 swift, emission of electrons by, A., 557.
Mercury ointments. See under Ointments.
Mercury seal, simple, A., 1343.
Merlangus vulgaris, calcium: phosphorus ratio in, B., 604.
 Merquinoidine, A., 1513.
 "Merphenyl nitrate." See Mercuric phenyl nitrate.
 Merthiolate, toxicity of, A., 1421.
 Mesacononitrile, A., 737.
 ultra-violet absorption spectrum of, A., 563.
 Mesantenol hydrogen phthalate, A., 755.
 Mesantone, and its semicarbazone, A., 755.
 Mescaline derivatives, catatonia from, A., 119.
 Mesityl oxide *m*-nitrobenzhydrazide, A., 743.
 Mesityl anthraquinonyl ketone, and its oxime, A., 869.
 Mesitylbenzylglyoxal. See $\alpha\beta$ -Diketo- γ -phenyl- α -mesitylpropane.
 Mesityl γ -bromo- β -hydroxy- β -88-triphenyl-2 γ -butenyl ketone, A., 494.
 Mesityl γ -bromo- β -hydroxy- β -88-triphenyl-butyl ketone, A., 493.
 β -Mesityl-*n*-butyl methyl ketone semicarbazone, A., 493.
 β -Mesityl-*n*-butyromesitylene, A., 493.
 Mesityldimethylcarbinol, A., 493.
 Mesityldimethylphosphine, and its derivatives, A., 768.
 Mesityldiphenylcarbinol, A., 493.
 Mesitylene, preparation of, A., 334.
 production of, (P.), B., 840.
 electrochemical oxidation of, A., 1229.
 sulphonation of, A., 967.
 compounds, steric hindrance in, A., 493.
 Mesitylenedisulphomethylnitroamide, nitro-, A., 967.
 Mesitylenedisulphonic acid, salts, esters, and derivatives, A., 967.
 Mesitylene-2:4-disulphonyl chloride, A., 967.
 Mesitylenetrisulphonic acid, and its salts, A., 967.
 2-Mesityl-1:4-dihydroxynaphthalene, A., 1126.
 Mesityl β -hydroxy- β -88-triphenylbutyl ketone, A., 494.
 Mesityl γ -hydroxy- β -88-triphenylbutyl ketone, A., 494.
 Mesityl iodomethyl ketone, A., 979.
 Mesityl diiodomethyl ketone, A., 979.
 2-Mesityl-1:4-naphthaquinone, and its derivatives, A., 1126.
 3-Mesityl-2- α -naphthaquinonylcyanooacetic acid, ethyl ester, A., 1126.

- Mesityl β - γ -oxido- β δ -triphenylbutyl ketone**, A., 494.
- Mesityl β -phenylethyl ketone**, A., 979.
- Mesityl β -3-piperidylethyl ketone**, and its hydrochloride, A., 499.
- Mesityl styryl ketone semicarbazone**, A., 979.
- Mesityl 2:4:6-trimethylstyryl ketone**, A., 493.
- Mesityl β δ -triphenyl- $\Delta^{\alpha\gamma}$ -butadienyl ketone**, A., 494.
- Mesityl β δ -triphenyl- Δ^{α} -butenyl ketone**, A., 494.
- Mesityl β δ -triphenylbutyl ketone**, A., 494.
- α -Mesityl- δ -triphenylpenta- $\alpha\gamma$ -dione**, and its bromo-derivatives, A., 493.
- Meslin**, flour and bread from, B., 780.
- Mesoporphyrin diecyl and di-(δ)-menthyl esters**, A., 1383.
- Mesothorium**, A., 275.
- Mesoxalic acid**, decarboxylation of, by glyceraldehyde and methylglyoxal, A., 1106.
- Mesquite wood**, hemicelluloses from, A., 1042.
- Metabolism**, determination of, by the interferometer, A., 519.
- racial factor in, A., 1399.
- specific-dynamic increase in, A., 113.
- influence of gonads on, A., 128.
- influence of nutrition on, A., 779.
- relation of water and electrolytes to, A., 1012.
- during growth, A., 118.
- in tissues, A., 782.
- growing in cultures, A., 1414.
- in undernutrition, A., 1013.
- during work, action of proteins on, A., 651.
- amino-acid, A., 1014, 1272.
- effect of insulin on, A., 127.
- isobarbituric acid, in growing dogs, A., 118.
- basal, in relation to body weight, A., 651.
- in relation to corpulence, A., 651.
- effect of caffeine on, A., 528.
- effect of dyes on, A., 1159.
- effect of di-iodotyrosine and potassium iodide on, A., 781.
- and exogenous hyperthermia, A., 1013.
- and endogenous nitrogen, relation between, A., 1271.
- in pre-adult years, prediction of, A., 1403.
- of Chinese American-born and American girls, A., 889.
- of dairy cows, A., 1150.
- human, constancy in, A., 889.
- compounds affecting, A., 1171.
- in old age, A., 777.
- in rabbits, A., 1003.
- effect of thyroxine on, A., 651.
- determination of, interferometrically, A., 1528.
- bilirubin, effect of calcium diet on, A., 1021.
- calcium, effect of bile acids on, A., 1158, 1531.
- effect of endocrine glands on, A., 258.
- foetal, A., 243.
- calcium and phosphorus, in albino rats, effect of fluorine on, A., 399.
- in cows, effect of low-calcium rations on, A., 1409.
- of dogs, effect of diet on, A., 393.
- of women, effect of cod-liver oil or yeast on, A., 243.
- carbohydrate, A., 518.
- effect of irradiation on, A., 892.
- Metabolism**, carbohydrate, effect of ultra-violet light on, A., 121.
- at high altitudes, A., 241.
- biology of, A., 1408.
- in circulatory insufficiency, A., 1008.
- and bile acids, A., 111, 390.
- and blood-sugar during exercise, A., 110.
- control of, by kidneys, A., 241.
- effect of adrenal cortex on, A., 1530.
- effect of creatine on, A., 1150.
- effect of lipins on, A., 1015.
- effect of muscular work on, A., 1016.
- effect of pituitary, hypothalamus, and autonomic nerves on, A., 902.
- effect of radium rays on, A., 1414.
- effect of respiration of oxygen and of air rich in carbon dioxide on, A., 520.
- effect of spleen extracts on, A., 1530.
- rôle of thyroid in, A., 888.
- in hypophysectomised frogs, A., 891.
- anaerobic, fission products of, A., 778.
- intermediary, from angiostomy data, A., 111.
- carbohydrate, fat, and protein, in white rats, A., 1152.
- chlorine, A., 115.
- cholesterol, effect of vitamin-A on, A., 1034.
- copper, A., 1017.
- in man, A., 393.
- copper and iron, in splenectomy, A., 392.
- creatine, in hypothyroidism, A., 108.
- and ovarian function, A., 517.
- creatine and creatinine, A., 654.
- cystine, A., 1272.
- ducks, A., 238.
- energy, of albino rats in relation to nutrition, A., 651.
- fat, A., 242, 390, 1015, 1151, 1273, 1407.
- cholesteryl esters in, A., 1015.
- liver in relation to, A., 390.
- in fish, A., 242, 653, 1151.
- in infants, A., 891.
- in man, regulation of, A., 390.
- of rabbit foetus, rôle of placenta in, A., 778.
- fat and lipin, rôle of liver, spleen, and reticulo-endothelial system in, A., 523.
- action of thyroïdin and thyroxine on, A., 127.
- fatty acid, spectroscopy of, A., 241.
- of fatty tissues, A., 114.
- galactose, A., 1016, 1151.
- gaseous, measurement of, A., 878.
- in microbiology, reaction vessel for measurement of, A., 798.
- effect of tyrosine on, A., 1275.
- of tissues *in vitro*, A., 387.
- of small animals, apparatus for measurement of, A., 652.
- of dogs, apparatus for measuring, A., 238.
- human, action of sulphur on, A., 531.
- glycogen, in rats, after partial hepatectomy, A., 111.
- hemoglobin, A., 1517.
- homocysteine and homocystine, A., 1153.
- intermediary, relation of, to acidosis, A., 524.
- iodine, A., 243, 259.
- in hyperthyrosis, A., 1009.
- in relation to thyroid activity, A., 1423.
- iron, A., 243.
- in infants, A., 1010.
- effect of fruit and vegetable diet on, A., 115.
- Metabolism**, iron, of women, A., 654.
- lactic acid, in tissues, A., 1273.
- lipin, A., 1155.
- rôle of liver in, A., 890.
- lipochrome, of horses, A., 1264.
- mammalian, effect of heavy water on, A., 1403.
- methyltryptophan, A., 1015.
- mineral, A., 114.
- influence of spleen on, A., 1154.
- of cows, A., 392.
- of cows and horses, A., 114.
- nitrogen, A., 113, 395, 526.
- relation between oxygen consumption and, A., 112.
- effect of sodium citrate on, on a fat diet, A., 891.
- of invertebrates, A., 1407.
- in isolated tissues of rats, A., 1152.
- endogenous, effect of amino-acids on, A., 1272.
- in hypophysectomised rats, A., 1015.
- of residual nitrogen in rabbits inoculated with BCG, A., 1170.
- nuclein, A., 510, 524, 1003, 1529.
- oxalic acid, A., 386.
- phosphate, in muscular work, A., 1150.
- phospholipin, A., 1397, 1530.
- phosphorus, use of radioactive indicators in study of, A., 1531.
- of sucking pigs, A., 1154.
- porphyrin, A., 1007.
- potassium, A., 1274.
- protein endogenous, ammonia and ketones in urine in, A., 891.
- of protozoa, A., 1419.
- purine, A., 113.
- of dogs, effect of adrenaline on, A., 790.
- of Dalmatian dogs, effect of insulin on, A., 789.
- pyruvic acid, in tissues, A., 1273.
- rhythmic, A., 113.
- serine, A., 886.
- sodium, A., 1274.
- sodium chloride, central disturbance of, A., 1274.
- sulphur, A., 1008.
- influence of spleen on, A., 1154.
- uric acid, A., 1273.
- effect of X-rays on, A., 1414.
- urobilin, effect of calcium diet on, A., 1021.
- Metabolites**, oxidation of, A., 114.
- Metacetaldehyde**, preparation of, and its effect on the rotation of ethyl tartrate, A., 1107.
- Metacholesterol**, and its separation from cholesterol, A., 1363.
- Metachromasia**, histochemical significance of, A., 511.
- Metachromatism**, A., 428.
- Metahalloysite**, crystal structure of, A., 571.
- Metals**, A., 692.
- and alloys, A., 1455.
- nature of, A., 435.
- at. wt. and fungicidal activity of, B., 199.
- surface structure of, A., 1307.
- correlation of structure and plastic properties of, B., 257.
- X-ray study of fine-structure of, B., 502.
- polymorphism of, A., 289.
- theory of, A., 1452.
- electron theory of, A., 1298.
- surface waves in, A., 814.
- number of free electrons in, A., 801.
- free paths of electrons in, A., 153.
- diffraction of electrons by, A., 1452.
- liberation of electrons from, A., 274.
- interaction of electrons in, A., 153.

Metals, effect of slow electrons on surface reactivity of, A., 1332.
 extraction of, from ores, (P.), B., 273, 908.
 recovery of, from their oxides, silicates, and carbonates, (P.), B., 638.
 heat treatment of, (P.), B., 107, 234, 313.
 in electric furnaces, B., 360, 593.
 heat treatment in controlled atmospheres and gaseous carburising of, B., 633.
 electrical heat treatment of, B., 29.
 purification of, (P.), B., 680, 956.
 refining of, (P.), B., 315, 810.
 by vacuum, (P.), B., 556.
 prevention of explosion of alkali nitrates melts for, B., 809.
 degreasing of, by organic solvents, B., 154.
 removal of metals from, B., 905.
 separation of, by vacuum distillation, (P.), B., 504.
 apparatus for annealing of, (P.), B., 637.
 bright-annealing of, furnaces for, (P.), B., 955.
 gases for, (P.), B., 955.
 purification of hydrogen for, (P.), B., 629.
 casting of, (P.), B., 772.
 converters for, (P.), B., 555.
 lubricant for drawing and stamping of, (P.), B., 277.
 grain size in, B., 549.
 foundry properties of, B., 28.
 hardness of, at high temperatures, B., 272.
 variation of, with temperature, A., 922.
 induction of hardness fluctuations in, by mechanical, thermal, and magnetic disturbances, B., 152.
 precipitation-hardening in, B., 312.
 precipitation-hardening and secondary structure of, A., 1449.
 use of diamond in testing hardness of, B., 593.
 cooling and lubrication during working of, B., 153.
 apparatus for mechanical tests on, B., 310.
 testing of, with polarisation microscope, B., 501, 1146.
 bending-tensile test on, B., 230.
 tensile tests on, B., 361.
 samples for dynamic testing of toughness of, B., 63.
 hardness testing machine for, B., 501.
 working strength of, under impact, B., 153.
 impact testing of, B., 192, 678.
 impact torsion tests on, B., 856.
 detection of flaws in, magnetically, B., 1146; (P.), B., 1148.
 creep of, under stress produced by flexure, B., 954.
 Rohn test for, B., 729.
 interrelation of age-hardening and creep performance of, B., 952.
 apparatus for creep tests on, at high temperatures, B., 230.
 automatic creep test furnace-guide for, B., 410, 411.
 welding of, (P.), B., 909.
 apparatus for testing welds in, B., 310.
 production of uniform scratches on, B., 65.
 elastic moduli of, A., 154; B., 501.
 apparatus for study of fatigue of, B., 65.
 atmospheric action in fatigue of, B., 311.
 influence of notches on fatigue of, B., 192.
 optical properties of, A., 288.
 optical reflexion by, A., 1310.

Metals, quantum theory of reflexion from, A., 908.
 absorption of light by, A., 1310.
 photo-electric effect for, A., 1191.
 external photo-electric effect of, A., 139.
 photo-electric effect between dielectrics and, A., 1293.
 secondary radiation of slow cathode rays at thin layers of, A., 1439.
 effect of light on electrical conductivity of, A., 923.
 conductivity and light absorption of thin layers of, A., 1191.
 temperature coefficient of electrical conductivity of thin films of, A., 20.
 surface conductivity of, A., 20.
 potential of, in solutions of other ions, A., 449.
 effect of pressure on electrical resistance of, A., 1453.
 variation of resistance of, in magnetic fields, A., 435.
 electrolysis of, during scraping of anode and cathode with diamond, A., 456.
 electrodeposition of, B., 192; (P.), B., 506, 909.
 electrochemistry of, B., 857.
 anodes for, (P.), B., 461.
 from their pyrophosphate solutions, A., 1330.
 as seamless endless bands, (P.), B., 1000.
 overpotential in, A., 171.
 action of colloids in baths for, B., 361.
 anodic polarisation of, in aqueous solutions, A., 171, 306.
 anode and cathode efficiencies of, B., 857.
 specification of electrodeposited coatings, of, B., 730.
 quantum theory of ionisation and neutralisation on, A., 1298.
 electron transfer from, to dielectrics, A., 5, 557.
 magnetic cooling and superconductivity of, A., 290.
 change of magnetic susceptibility of, on melting and allotropic transformation, A., 1453.
 magnetic study of, and Fermi-Dirac statistics, A., 18.
 Thomas-Fermi method for, A., 679.
 and their solid solutions, magnetism and electronic state of, A., 1309.
 thermo-electric force of thin films of, A., 154.
 entropy and parachor of, A., 934.
 thermal conductivity of, B., 729.
 effect of cold-working on, A., 692.
 thermal behaviour of, at low temperatures, A., 156.
 heat of loosening of lattices of, A., 1310.
 resistance of, to high temperatures, B., 230.
 determination of coefficients of linear expansion of, with Schevenar dilatometer, B., 272.
 thermal expansion of, at high temperatures, A., 21.
 latent heat of condensation of, A., 1454.
 molecular heat of, at high temperatures, A., 20.
 specific heat of, A., 690.
 at high temperatures, A., 21.
 heat evolved in transformations in, A., 704.
 pure, theory of thermionic constants for, A., 1293.
 determination of thermionic work function of, A., 1293.

Metals, calculation of emergence work in Sommerfeld's model of, A., 1298.
 deformability and cleavability of, A., 1311.
 effect of deformation at high temperatures on, B., 951.
 melting of, rotary and semi-rotary furnaces for, (P.), B., 154.
 firing of baths for, (P.), B., 929.
 molten, removal of gases from, (P.), B., 679.
 flotation of non-metallic inclusions in, B., 553.
 and their salts, on glass, transport of electricity through, A., 1071.
 internal friction of, A., 927.
 oxide films on, A., 294.
 electron diffraction of, A., 18.
 surface tension of, A., 811.
 equilibrium between slags and, A., 303.
 liquid, effect of magnetic field on resistance of, A., 1312.
 X-ray study of tarnishing of, B., 954.
 rotary furnaces for distillation of, (P.), B., 234.
 vacuum distillation of, B., 729, 853.
 apparatus for fractional condensation of vapours of, (P.), B., 555.
 laboratory vacuum furnaces for vaporisation of, A., 465.
 effect of electrostatic fields on vaporisation of, A., 21.
 apparatus for study of density changes in, A., 59.
 compression of, in formation of inter-metallic compounds, A., 158.
 measurement of internal friction of, B., 637.
 surface friction and adsorption on, A., 697.
 adsorption by, of colloids and its effect on structure of electrodeposits, A., 294.
 adsorption of alkali metals on surfaces of, A., 929.
 electric polarisation of hydrogen adsorbed on surfaces of, A., 556.
 Hele-Shaw apparatus for study of flow of, B., 1049.
 molecular layers of fatty substances on, A., 1308.
 formation and structure of oily layers on surfaces of, A., 820.
 diffusion of deuterium in, A., 1315.
 diffusion of gases through, A., 25, 293, 439.
 solution of, in borax beads, A., 55.
 mechanism of, A., 308.
 inhibiting action of surface-active substances in, in acids, A., 41.
 velocity of solution of, in aqueous salt solutions, A., 454.
 solid solutions of, A., 24.
 solid solutions and compounds of, A., 158.
 premature precipitation in supersaturated solid solutions of, B., 153.
 crystals of, electrolytic growth of, A., 450.
 group phenomena in, A., 151.
 single crystals of, A., 811.
 solution of, A., 1325.
 study of deformation and recrystallisation of, A., 154.
 crystal structure of polished layers of, A., 1194.
 second order transformations in mixed crystals of, A., 439.
 production of lattice distortions in, by cold-deformation and their disappearance by recrystallisation, B., 554.

Metals, crystalline, magnetic resistance of, A., 1063.
 melting of, and their recrystallisation, A., 919.
 colloidalisation and cold-working of, B., 954.
 colloidal, formation of, by ultrasonic waves, A., 296.
 preparation of, A., 932.
 oxidising action of, A., 44.
 absorption spectra of colloidal solutions and films of, A., 1459.
 colloidal suspensions of graphite in, for bearings, (P.), B., 1098.
 change in catalytic activity of, at transformation points, A., 589.
 corrosion of, B., 231, 501, 770.
 measurement of, B., 272.
 standard tests for, B., 635.
 in relation to their polish, B., 905.
 effect of alternating currents on, in aqueous solutions, B., 502.
 effect of repeated bending on, B., 410.
 rôle of oxygen in, B., 231.
 in liquids, B., 1048.
 by solutions of ammonium nitrate in liquid ammonia, B., 1091.
 by phosphoric acid, B., 809.
 in sea water, B., 231, 855.
 in ships' hulls by lower sea fauna, B., 635.
 in soils, B., 191.
 in wood treated with zinc chloride, B., 104.
 electrolytic and galvanic corrosion of, B., 1048.
 intercrystalline corrosion in, B., 311.
 study of, by light-diffusion method, B., 997.
 residual stresses and corrosion cracks in, B., 361.
 optical study of passivity of, A., 38.
 coating of, with oxides, (P.), B., 1099.
 with tin, (P.), B., 157.
 production of composite coatings of, (P.), B., 236.
 structure and anti-corrosive properties of phosphate coatings on, B., 809.
 phase structure of protective coatings of, B., 997.
 spray coating of, (P.), B., 811.
 improvement of, B., 996.
 effect of liquids and gases on, B., 413.
 testing of coatings of, B., 192.
 corrosion inhibitors for, (P.), B., 66.
 corrosion-resisting joints for, (P.), B., 811.
 protection of, against corrosion, B., 636.
 with bituminous aluminium paints, B., 509.
 action of etching inhibitors for, B., 311.
 prevention of tarnishing of, (P.), B., 956.
 kinetics of anode film formation on, A., 1083.
 orientation of oxide films on, A., 161.
 study of oxide films on, with cathode-ray diffraction, B., 952.
 sulphide and hydroxide films on, A., 161.
 study of thin films on, with electron microscope, A., 161.
 transparent films on, A., 1310.
 cleaning of, B., 154; (P.), B., 907.
 detergents for, (P.), B., 1102.
 apparatus for acid cleaning of, (P.), B., 1051.
 electrolytic cleaning and pickling of, B., 460.
 electrolytic descaling, cleaning, and plating of, (P.), B., 1100.
 pickling of, (P.), B., 680.
 solutions for, (P.), B., 638.

Metals, pickling of, treatment of spent solutions from, (P.), B., 147.
 inhibitors for, (P.), B., 907.
 electrolytic regeneration of ferrous sulphate liquors from, (P.), B., 682.
 firing of groundcoats for enamels for, B., 405.
 priming paints for, B., 598.
 nitriding of, A., 1086; B., 554.
 oxidation of, A., 287, 1469.
 frictional oxidation of, A., 181.
 resistance of, to oxidation, B., 154.
 effect of air and ozone on, A., 41.
 action of cellulose nitrate solutions on, B., 417.
 activation of gases by, A., 43.
 action of nitrogen on, in low-pressure electric discharge, A., 1089.
 mutual displacement of, A., 171, 449.
 co-ordination index of, A., 182.
 influence of substituents in bases and anions on, A., 1448.
 use of radioactive alloys in study of, B., 232.
 use of vapour-phase cracked gases for cutting of, B., 153.
 cutting fluids for use in sawing of, B., 153.
 sealing of, to glass, A., 1477; B., 803; (P.), B., 406.
 effect of heat treatment on seals between glass and, B., 901.
 bonding of rubber to, (P.), B., 738.
 adhesives for rubber, fabrics, and, (P.), B., 917.
 coatings of, structure of, A., 1307.
 protective value of, B., 809.
 coating with, apparatus for, (P.), B., 1099.
 of fabrics and paper, (P.), B., 1099.
 of rubber, (P.), B., 1000.
 of wood, (P.), B., 994.
 electrolytic production of embossing foils of, (P.), B., 236.
 use of, as constructional materials, B., 232, 554.
 in dentistry, B., 28.
 in food manufacture, B., 554.
 for oil industry, B., 729.
 prohibited uses of, in Germany, B., 595.
 ageing of, B., 153.
 action of, at a distance on germinating seeds, A., 1179.
 of different m.p., separation of, (P.), B., 810.
 X-ray analysis of, B., 272.
 detection of, by drop analysis, A., 1473.
 in manufactured products, B., 154.
 with "thionamide," A., 950.
 detection in, of non-metallic impurities, B., 1051.
 determination of, with diphenylcarbazone, A., 950.
 spectroscopically, A., 185, 947; B., 272.
 in food colouring matters, B., 1021.
 in presence of phosphates, A., 56.
 determination and separation of, by means of anthranilic acid, A., 720.
 with "thionamide," A., 1338.
 separation of, with hydrogen sulphide, A., 719, 1474.
Metals, of the arsenic group, analysis of, A., 1092.
 bright, annealing of, (P.), B., 503.
 cold-worked, X-ray structure of, A., 154.
 cubic, mechanically worked, determination of crystal orientation in, A., 1060.
 deformed, lattice recovery of, A., 1311.
 degassed, action of oxygen on mirrors of, A., 587.
 ductile, brittleness in, B., 554.
 electrodeposited, structure of, B., 997.

Metals, electrodeposited, specification of, B., 772, 905.
 properties of, in relation to their structure, B., 997.
 influence of base metal on structure of, B., 997.
 influence of cathode on structure of, B., 997.
 effects of film formation on structure of, B., 997.
 electrode potentials and form of, B., 997.
 "somatoid" elements of structure in, B., 997.
 protective value and strength of, B., 595.
 physical testing of, B., 998.
 in the Far East, geochemical zone-like distribution of, A., 1343.
 ferromagnetic, A., 1309.
 elastic modulus of, A., 1062.
 finely-divided, preparation of, and their use as catalysts and adsorbents, A., 941.
 fusible, recovery of, (P.), B., 556.
 of Group III, qualitative analysis of, A., 1472.
 inclusion of titanium and vanadium in, A., 56.
 heavy, compounds of, in complex cations, A., 1203.
 in foods and biological material, A., 247.
 biochemistry of, A., 1276.
 high-boiling, vapour pressure of, measured by Baur and Brunner's method, A., 1454.
 inflammable, manufacture of, (P.), B., 1098.
 of the iron group, magnetic susceptibilities of salts of, A., 1063.
 colour of paramagnetic crystals and solutions of salts of, A., 1051.
 irradiated, oligodynamic action of, A., 896.
 biological action of, A., 1154.
 light, manufacture of, (P.), B., 909.
 electrolytically, (P.), B., 957.
 physico-chemical properties of, B., 771.
 degassing of, (P.), B., 414.
 induction furnaces for melting of, A., 319.
 prevention of attack of, by water, B., 905.
 determination in, of silicon, B., 771.
 of low m.p., wetting power of, for metals of high m.p., A., 930.
 noble, and their alloys, B., 552.
 electrode dispersion of, A., 1463.
 displacement of, from solutions of their salts by hydrogen under pressure, A., 824.
 non-ferrous, refining and casting of, (P.), B., 235.
 deoxidation of, (P.), B., 1051.
 gases in, B., 636.
 silvering of, (P.), B., 156.
 of the platinum group. See Platinum metals.
 polished, surface structure of, A., 1308.
 thickness of amorphous layer of, A., 1308.
 polymorphic, influence of mechanical deformation on transformation velocity of, A., 688.
 precious, recovery of, from cyanide solutions, (P.), B., 148, 810.
 losses of, during melting, B., 905.
 alloys of, (P.), B., 999.
 for dentures, (P.), B., 1148*.

- Metals**, scrap, bundling press for, for remelting, (P.), B., 811.
 transitional, magnetic resistance of, A., 1063.
 transition and univalent, crystal structure and electron configuration of, A., 1451.
 twisted, deformations in thermal treatment of, B., 997.
 univalent, work functions of, A., 1050.
 bivalent, chemistry and morphology of basic salts of, A., 461.
 yellow, die-casting with, B., 411.
- Metal articles**, brazing or soldering of, (P.), B., 556.
 heat treatment of, in electric furnaces, B., 554.
 surface-hardening of, (P.), B., 956.
 treatment of, for printing, (P.), B., 680.
 temporary coatings for protection of, (P.), B., 110.
 japanning of, B., 465.
- Metal cans**, sealing compositions for, (P.), B., 1026.
- Metal castings**, production of, from heat-developable reliefs, (P.), B., 506.
 anomalies in hardening of, B., 593.
 non-ferrous, mould for, (P.), B., 461.
- Metal containers**, coating of inside of, with waxes, etc., (P.), B., 909.
- Metal films**, structure of, A., 1200, 1307.
 produced by cathodic sputtering or vaporisation, A., 287.
 ultra-violet transparency of, A., 1200.
 photo-electric properties and electrical resistance of, A., 1446.
 sprayed, hardness of, B., 771.
 stratified, X-ray diffraction from, deposited by evaporation, A., 1449.
 thin, structure and physical properties of, on solids, A., 1449.
 scattering of light by, A., 288.
 crystallisation of, A., 1307.
 recrystallisation of, A., 1450.
- Metal foil**, electrolytic production of, (P.), B., 557.
 effect of electric charge on conductivity of, A., 435.
 coating of, with cellulose nitrate, (P.), B., 684.
 enamelling of, (P.), B., 1095.
 thin, velocity of photo-electrons in, A., 139.
- Metal layers**, evaporated, optics of, A., 1310.
- Metal powders**, production of, (P.), B., 956.
 sintering of, B., 678.
 coating of materials with, (P.), B., 157.
- Metal rods**, effect of drawing and bending on crystal lattice of, B., 413.
- Metal sheets**, electrolytic apparatus for manufacture of, (P.), B., 1002.
 annealing of, (P.), B., 555.
 deep-drawing of, (P.), B., 506.
 working of, (P.), B., 909.
 apparatus for electroplating of, (P.), B., 910.
 plating of, (P.), B., 998.
 coating of, with rubber, (P.), B., 1148.
 bright normalising and gas pickling of, B., 1046.
 electrical insulation of, (P.), B., 275.
 tinning of, for gas meters, B., 593.
 composite, for electrical purposes, (P.), B., 810.
- Metal strips**, annealing of, (P.), B., 555.
 furnace for, (P.), B., 998.
 furnaces for heat treatment of, (P.), B., 998.
- Metal strips**, apparatus for electrical heat treatment of, (P.), B., 957.
 bright normalising and gas pickling of, B., 1046.
- Metal surfaces**, temperature variation of photo-effect of, A., 12.
 photo-electric thresholds of, A., 682.
 heat of wetting of, by oil, A., 930.
 adsorption of alkali metals by, A., 27.
 production of relief patterns on, under action of corrosive gases, A., 1449.
- Metal wires**, coating of, with varnishes, etc., (P.), B., 910.
- Metalammines** from benzidine sulphate, A., 854.
- Metallic alkyls**, gaseous, free radicals in photodissociation of, A., 1468.
 carbides, nitrides, phosphides, and silicides, crystal structures of, A., 17.
 carbonyls, A., 314.
 production of, (P.), B., 495.
 spectra and photochemical decomposition of, A., 47.
 hexacarbonyls, thermochemistry of, A., 314.
 chlorides, production of, from sulphide ores, B., 21.
 complex compounds of, with 2:4:6-triaminotoluene, A., 944.
 anhydrous, preparation of, A., 314.
 mixed, as co-catalysts in growth of, A., 535.
 compounds, electrolytic production of, (P.), B., 226.
 fluorides, specific heats of, A., 437.
 action of water vapour on, A., 1088.
 halides, Raman spectra of, A., 1053.
 additive compounds of, with organic bases, A., 49.
 halides, oxides, selenides, sulphides, and tellurides, band spectra of, A., 562.
 hydroxides, amphoteric behaviour of, A., 35, 577.
 X-ray and electron analysis of gels of, A., 162.
 effect of ultrasonic waves on colloid solubility of, A., 1320.
 reaction of, with fluorine, A., 461.
 precipitation of, A., 460.
 use of lime in, (P.), B., 991.
 electrometric precipitation of, A., 936.
 ions, structure of, in aqueous solution, A., 579.
 potential-current curves in electrolytic neutralisation of, A., 585.
 detection of, with picric acid, A., 949.
 determination and separation of phosphate ions and, A., 1337.
 membranes. See under Membranes.
 nitrates, equilibria of, with acetamide, A., 582.
 nitrates and nitrites, decomposition of, A., 174.
 oxides, production of, (P.), B., 1092.
 Matignon's law of volatility of, B., 953.
 manufacture of sols of, (P.), B., 226.
 production of coatings of, (P.), B., 236.
 action of, with solid carbon, A., 592.
 resistance of refractory materials to, B., 356.
 magnets from, (P.), B., 1002.
 mixed, reduction of, A., 593.
 salts, diamagnetism of, A., 1197.
 electrodes for electrolysis of, (P.), B., 811.
 coloration of, by cathode rays, A., 1446.
 complex formation in aqueous solutions of, A., 162, 824.
 hydrolysis of, A., 181, 703.
- Metallic salts**, in nutrition, A., 243, 392.
 basic, A., 716.
 complex, absorption spectra of solutions of, in liquid ammonia, A., 1443.
 dry, reactions between, A., 832.
 sulphates, thermodynamics of, A., 583.
 sulphides, heats of formation of, A., 1078.
 with pyrites structure, magnetic properties of, A., 1197.
- Metallography**, at low temperatures, A., 59.
- Metalloids**, action of, on basic oxides, A., 592.
 compounds of, with basic oxides, A., 1332.
- Metallurgy**, during 1934, review of, B., 553.
 law of mass action in relation to equilibria in, A., 1076.
- Metanilic acid**. See Aniline-*m*-sulphonic acid.
- Metaphen**, toxicity of, A., 1421.
- Meteors**, atomic collision and radiation of, A., 1297.
 ionising effects of, A., 1443.
- Meteoric iron**, A., 601.
- Meteorio stone** of Mangwendi, Southern Rhodesia, A., 600.
- Meteorites**, radioactivity and age of, A., 191.
 Brazilian, determination in, of germanium, spectroscopically, A., 1099.
 from Lanton, Howell County, Missouri, A., 324.
 of Melrose, New Mexico, gold in, A., 60.
 Roy, from Harding Co., N. Mexico, A., 1101.
 of S. Dakota, A., 469.
 stone, abundance of oxygen isotopes in, A., 191.
- Methacrylic acid**, β -methoxyethyl ester, (P.), B., 716.
- Methæmoglobin**, spectrum of, A., 563, 806.
 compounds of, with hydrogen peroxide and with salts, A., 878.
 combination of, with peroxides, A., 372.
 formation and determination of, in blood, and its treatment with glucose, A., 1141.
- Methane**, electron configuration of, A., 1188.
 rotational level of, A., 810.
 molecular rotation and vibration of, A., 1193.
 formation of, in pyrolysis of ethane and ethylene, A., 40.
 synthesis of, B., 1035.
 production of, from carbon monoxide and dioxide, B., 390.
 with nickel catalysts, B., 1124.
 ultra-violet absorption spectrum of, A., 144.
 scattering of X-rays by, A., 432.
 electric moment of, A., 567.
 heat capacity of, and its halogen derivatives, A., 1064.
 enthalpy-temperature diagram for, A., 1454.
 viscosity of solutions of, in crystal oil, B., 888.
 adsorption of, by active carbon, A., 696.
 and hydrogen, by charcoal, A., 818.
 by coal, A., 1457.
 bedding of, and its adsorption by coal, B., 706.
 rate of solution of, in liquid hydrocarbons, B., 218.
 equilibrium of, with ethylene, A., 447.
 catalytic cracking of, B., 714.
 catalytic effect of mercury on cracking of, by the glow discharge, A., 943.
 catalytic exchange of deuterium and hydrogen in, A., 588.

- Methane**, complete combustion of, in presence of copper oxide, B., 341.
ignition of, by compression, B., 483, 1124.
by coal-mining explosives, B., 335.
by broken electric lamp filaments, B., 211.
ignition of mixtures of air and, by heated surfaces, A., 1464.
spark ignition of mixtures of, with oxygen, A., 172.
effect of reaction vessel surface on explosions of, with oxygen, A., 709.
chlorination of, B., 137, 617, 938.
decomposition of, A., 827.
thermal decomposition of, A., 191.
catalytic oxidation of mixtures of ammonia and, A., 1329.
partial oxidation of, (P.), B., 661.
slow oxidation of, A., 172.
catalytic pyrolysis of, B., 258.
photochemical reaction of, with chlorine and oxygen, A., 48.
reaction of, with deuterium under influence of excited mercury, A., 457.
catalysts for, with steam, (P.), B., 724.
production of benzene hydrocarbons from, B., 261.
synthesis of liquid hydrocarbons from, B., 390.
determination of, by catalytic oxidation, B., 261.
- Methane**, chloro-derivatives, Kerr effect of, A., 810.
dichloro-, production of, B., 1165.
thermodynamic properties of, A., 437.
dichlorodifluoro-, detection of leaks of, in refrigerators, (P.), B., 1074.
dichlorodinitro-, preparation of, A., 62.
trichlorobromo-, Raman spectrum of, A., 11.
diiodo-, action of light on, A., 48.
nitro-, production and properties of, B., 1024.
Raman effect in, A., 564.
dielectric studies of, A., 1304.
condensation of, with halogeno-aldehydes, A., 1224.
with diketone-compounds, A., 347.
action of, on α -diketones, A., 1126.
halides, reactions of, A., 470.
- Methanedisulphon-*tert*-butylamide**, A., 472.
- Methanedisulphonic acids**, derivatives of, A., 472.
- Methaneseleninic acid**, and its salts, A., 959.
molecular compounds of, A., 960.
- N*-Methanesulphonylbenzenesulphon-*p*-aminoanilide**, and its *d*-camphor-10-sulphonate, A., 1118.
- N*-Methanesulphonylbenzenesulphon-*p*-nitroanilide**, A., 1118.
- Methanetetra-acetic acid**, amides and *spiro*-cyclic imides of, A., 479.
symmetrical esters and chloride of, A., 328.
- Methanol-lignin**, and its derivatives, A., 1373.
- Methionine**, utilisation of, by growing oats, A., 1533.
- Methionines**, relation of, to homocystines, A., 737.
- d*-Methionine**, A., 737.
- dl*-Methionine**, solubility of, in water, A., 695.
benzenesulphonyl derivative, A., 101.
- dl*- and *l*-Methionines**, retention and secretion of, on diet of various protein contents, A., 779.
- Methoxides**, conductivity of, A., 705.
- Methoxyacetic acid**, *tert*-, butyl, α -dimethylpropyl, α -ethylpropyl, α -methylbutyl, and α -methylpropyl esters, A., 473.
- 8-Methoxy-7-acetonyloxy coumarin**, A., 986.
- o*-Methoxyacetophenone**, ω -nitro-, A., 616.
- p*-Methoxyacetophenone** *p*-nitrobenzoyl-hydrazone, A., 1259.
o-tolylseismicarbazone, A., 1259.
- 4-Methoxyacetophenone**, 5-nitro-2-hydroxy-, identity of nitrophenol with, A., 85.
- 5-Methoxy-7-acetyl-3:9-dimethyl-4:5-dihydrouric acid**, 4-hydroxy-, acetyl derivative, A., 226.
- 7-Methoxy-8-acetyl-2-methylchromone**, A., 80.
- 5-Methoxy-7-acetyl-3-methylhydantamide**, A., 226.
- 4'- β -Methoxyacetyl-3:3':5'-trimethyl-4- β -carboxyethylpyrrole**, 5-bromo-, hydrobromide, A., 632.
- 4'- β -Methoxyacetyl-3:3':5'-trimethyl-4- β -carboxyethylpyrromethene**, 5-hydroxy-, A., 632.
- 5-Methoxy-7-acetyl-1:3:9-trimethyl-dihydrouric acid**, 4-hydroxy-, A., 361.
- δ -Methoxy- α -acetyl- γ -valerolactone**, A., 352.
- 5-Methoxyacridine**, A., 1251.
- 6-Methoxy-2-*n*-amyl-*p*-benzoquinone**, and 3-bromo-, A., 347.
- 2-*p*-Methoxyanilo-3-phenyl- α -hydrindone**, A., 1370.
- 4-Methoxy-9-anthrone**, and 1-hydroxy-, A., 217.
- 2-[4-Methoxy-9-anthrone]-2'-[5'-chloro-indole]indigotin**, A., 217.
- p*-Methoxybenzaldehyde**, electric moment of, A., 1447.
m-nitrobenzhydrazide, A., 743.
N-nitroguanylimine, A., 769.
- m*-Methoxybenzaldehydechloroimine**, A., 620.
- 4-Methoxybenzaldehydechloroimine**, 3-nitro-, A., 620.
- 2-Methoxybenzenediazonium sulphate**, 5-chloro-4-amino-, 4-benzoyl derivative, (P.), B., 985.
- 2-Methoxy-4-benzhydryl-1-naphthol**, and its acetyl derivative, A., 1243.
- r*-4-Methoxybenzilic acid**, A., 489.
- o*-Methoxybenzoic acid**, acetyl- α -naphthyl ester, A., 91.
1-acetyl-2-naphthyl and *o*-acetylphenyl esters, A., 1129.
- 3-Methoxybenzoic acid**, 2-amino-, and 2-bromo-, A., 761.
6-bromo-, A., 339.
- 4-Methoxy-*o*-benzoquinone**, A., 87.
- γ -4-Methoxybenzoylbutyric acid**, γ -amino-, and γ -3-nitro-, A., 1236.
- β -4-Methoxybenzoylpropionic acid**, β -3-amino-, A., 1236.
- δ -4-Methoxybenzoylvaleric acid**, δ -3-amino-, and δ -3-nitro-, A., 1236.
- p*-Methoxybenzyl acetate**, synthesis of, A., 1120.
- 4-Methoxybenzylaminomethylanhydrocotarnine dihydrochloride**, A., 767.
- 6-Methoxybenzylbenzaldehyde**, 2,4-di-hydroxy-, A., 1128.
- 5-*p*-Methoxybenzylcreatinine**, A., 850.
- 2-*p*-Methoxybenzyl-4:5-dimethylbenzoic acid**, A., 1372.
- 4-Methoxybenzylhydantoin**, 3-hydroxy-, A., 489.
- 3-Methoxybenzylidene bromide**, 4-hydroxy-, benzoyl derivative, A., 208.
- 4'-Methoxybenzylideneaminomethyl-anhydrocotarnine**, A., 767.
- m*-Methoxybenzylideneaminoxanthone**, *p*-hydroxy-, A., 497.
- Methoxybenzylidenecoumaranones**, influence of chemical constitution on tinctorial properties of, A., 86.
- Methoxybenzylidene- β -coumarones**, synthesis of, A., 85.
- 3- and 5-Methoxybenzylideneglycines**, 2-hydroxy-, barium salts, A., 491.
- 4-Methoxybenzylidenehydantoin**, 3-hydroxy-, acetyl derivative, A., 489.
- 4-3-Methoxybenzylidenepyruvic acid** hydroxy-, A., 981.
- 4-Methoxybenzylidenethiohydantoin**, 3-hydroxy-, acetyl derivative, A., 489.
- m*-Methoxy(benzoyloxy)benzylidenephényl-isooxazolone**, A., 1497.
- 7-Methoxy-4'-benzyloxyflavanone**, A., 1129.
- 5-Methoxy- α -(*m*-benzyloxyphenyl)-cinnamic acid**, 2-amino-, and 2-nitro-, A., 1497.
- 3-(3-Methoxybenzyl)-3:4:5:6-tetrahydro-norharman**, 3:4-hydroxy-, hydrochloride, A., 1388.
- 3-(3-Methoxybenzyl)-3:4:5:6-tetrahydro-norharman-3-carboxylic acid**, 3:4-hydroxy-, A., 1388.
- β -Methoxy- $\Delta^2\gamma$ -butadiene**, A., 1221.
- 4-Methoxyisobutyrophenone**, 2-hydroxy-, A., 1128.
- 3-Methoxy-4-carbomethoxy-5-methyl-*o*-phthalic acid**, A., 1238.
- 3-Methoxy-1-carboxybenzaldehyde**, and its 2:4-dinitrophenylhydrazone, A., 619.
- 2-Methoxy-6-carboxy-4-methyl-5- β -dichloroethylphenylacetic acid**, A., 748.
- Methoxy-6-carboxymethylphenylacetic acids**, and their anhydrides, A., 748.
- 8-Methoxychlorodiethylaminomethylbenzodioxans**, and their hydrochlorides, A., 1504.
- 5-Methoxy- β -dichloroethyl-*m*-toluic acids**, A., 748.
- Methoxychromeno-[3':4':2:3]-chromones**, 7-hydroxy-, and their acetates, A., 1130.
- 2-Methoxycinnamic acid**, 5-nitro- α -amino-, α -benzoyl derivative, A., 1385.
- p*-Methoxycinnamic acid**, f.-p. curve of, A., 436.
2-acetyl-1-naphthyl ester, A., 1129.
- 4-Methoxycinnamic acid**, α -amino-3-hydroxy-, benzoyl derivative, A., 489.
- ω -*p*-Methoxycinnamoyl-2-acetyl-1-naphthol**, A., 1129.
- 4-Methoxycinnamylidenepyruvic acid**, and its sodium salt and 2:4-dinitrophenylhydrazone, A., 1237.
- 4-Methoxycoumaric acid**, geometrical inversion of, and its esters, A., 211.
- 7-Methoxycoumarin-5-acrylollactone**, 6-hydroxy-, A., 1376.
- 3-Methoxycoumarone**, 5-hydroxy-, A., 1128.
- 4-Methoxy-1:9-diacetoxanthracene**, A., 217.
- 5-Methoxy-1:7-diacetyl-3-methylhydantamide**, A., 226.
- 5-Methoxy-3:7-diacetyl-1-methylhydantamide**, A., 96.
- 8-Methoxydibenzofuran**, 1-hydroxy-, A., 985.
- 6-Methoxy-3:4'-dicarboxy diphenyl ether**, dimethyl ester and acid chloride of, A., 637.
- p*-Methoxydiethylaniline**, and its ethiodide and methiodide, A., 614.
- 5-Methoxy-5:10-dihydroacridine-5-sulphonic acid**, sodium salt, A., 1251.
- 6-Methoxy-2:3-dimethylanthraquinone**, A., 1372.
- 3-Methoxy-1':4'-dimethylazobenzene**, 4-hydroxy-, A., 1489.

- 6-Methoxy-2:5-dimethyl-*p*-benzoquinone, A., 347.
- 4-Methoxy-2:2'- and -2:4'-dimethyldeoxybenzoins, 2:4-dinitrophenylhydrazones of, A., 1242.
- 5-Methoxy-3:3'-dimethyl-4:4'-di-(β -carboxyethyl)pyrromethene, 5'-bromo-, and its derivatives, A., 364.
- 5-Methoxy-4:4'-dimethyl-3:3'-di-(β -carboxyethyl)pyrromethene, 5'-bromo-, and its derivatives, A., 363.
- 5-Methoxy-4:4'-dimethyl-3:3'-diethylpyrromethene, 5'-bromo-, A., 364.
- 5-Methoxy-3:9-dimethyl-4:5-dihydrouic acid, 4-hydroxy-, acetyl derivative, A., 226.
- 5-Methoxy-3:3'-dimethyl-4'-ethyl-4- β -carboxyethylpyrromethene, A., 633.
- 7-Methoxy-3:3'-dimethyl-1:2-cyclopentenophenanthrene, A., 753.
- p*-Methoxy- ω -dimethylphenacylpyridinium bromide, A., 987.
- 7-Methoxy-1:3'-dimethyl-1:2:3:4-tetrahydro-1:2-cyclopentenophenanthrene, and its derivatives, A., 752.
- 5-Methoxy-1:3-dimethyl-4¹⁰-isouric acid, A., 96.
- 2'-Methoxydiphenyl, 2-amino-, 2-iodo-, and 2-nitro-, A., 79.
- 4-Methoxydiphenyl ether, 2-amino-2':4'-dinitro-, A., 484.
- 4'-Methoxydiphenyl ether, 2-*mono*- and 2:3'-*di*-fluoro-, A., 856.
- 6-Methoxydiphenyl ether 3:4'-diacetylhomoveratrylamide, A., 637.
- o*- and *p*-Methoxydiphenyl sulphides, and their phenolic derivatives, (P.), B., 841.
- 5-Methoxydiphenylamine, 2':4'-dinitro-2-hydroxy-, A., 484.
- 2-Methoxydiphenylaminesulphone, (P.), B., 140.
- 5-Methoxy-1:3-diphenyl-5-*p*-bromophenyl-2-pyrrolone, A., 498.
- β -Methoxy- α -diphenyl-4'-butene- γ -dione, α -hydroxy-, A., 982.
- 2'-Methoxydiphenyl-6-carboxylic acid, 4'-bromo- and 4'-chloro-2-nitro-, and 2:4'-dinitro-, and their cinchonine salts, A., 1364.
- 2-nitro-, A., 1364.
- 4-Methoxydiphenylcarboxylic acids, A., 1361.
- Methoxydiphenyldicarboxylic acids, A., 1361.
- o*-Methoxydiphenylketipinodinitrile, (P.), B., 1238.
- α -Methoxy- α -diphenyl- β -methylpentane, A., 1223.
- Methoxydistyryl ketones, 4-chloro-, and 4'-hydroxy-, A., 85.
- 6-Methoxy-3:4'-ditolyl ether, A., 637.
- 3-Methoxyethoxy-1:4'-dimethylazobenzenes, 4-hydroxy-, A., 1489.
- 3-Methoxy-4-ethoxyphenylacetoneitrile, A., 485.
- β -3-Methoxy-4-ethoxyphenyl- α -methylcrotonic acid, and its ethyl ester, A., 485.
- β -3-Methoxy-4-ethoxyphenyl- α -methylpropionic acid, and its methyl ester, A., 485.
- 6-Methoxy-6'-ethoxythioindigo, manufacture of, (P.), B., 764.
- Methoxyethyl mercuric salts and esters, (P.), B., 655.
- β -Methoxyethyl *p*-aminobenzoate, and its picramide, A., 1494.
- 4'- and 6'-Methoxyflavones, A., 1248.
- 4'-Methoxyisoflavone, 7-hydroxy-, benzyl ether, A., 91.
- 4'-Methoxyflavylum chloride, *mono*- and *di*-hydroxy-derivatives, A., 1129.
- 8-Methoxyflavylum chloride, 4'-hydroxy-, A., 1129.
- 3-Methoxyfluorenone, A., 1124.
- 3-Methoxyglucosidone, and its methiodide, A., 1382.
- 6-Methoxy-2-*n*-heptyl-*p*-benzoquinone, A., 347.
- α -Methoxyhexane- β -c-dione, and its di-*p*-nitrophenylhydrazone, A., 352.
- o*-Methoxycyclohexyl mercury phosphate, production of, (P.), B., 655.
- 9-Methoxy-9-*p*-cyclohexylphenylfluorene, A., 1358.
- 5-Methoxyhomophthal- β -*m*-methoxyphenylethylamic acid, and its methyl ester, A., 767.
- 5-Methoxyhomophthal- β -*m*-methoxyphenylethylimide, A., 767.
- 4-Methoxy-2-homoveratrylquinazoline, A., 760.
- 8-Methoxyhydroxydiethylaminomethylbenzodioxans, A., 1504.
- 4'-Methoxy-4-(β -hydroxyethoxy)chalkone, 2-hydroxy-, and its acetyl derivatives, A., 1247.
- 4'-Methoxy-7-(β -hydroxyethoxy)flavone, and its acetyl derivative, A., 1247.
- Methoxyl groups, determination of, microvolumetrically, A., 1516.
- in wood, B., 844.
- 8-Methoxylævaldehyde, and its bisdinitrophenylhydrazone, and γ -hydroxy-, and its dimethylacetal, A., 607.
- Methoxy-mercurials, reaction of, A., 1515.
- 2-Methoxy-5-methoxymethyl-4:5-dihydrofuran-3-carboxylic acid, and its methyl ester, A., 352.
- 4'-Methoxy-4-(*p*-methoxyphenacylidene)-flavene, A., 354.
- 5-Methoxy- α -(*m*-methoxyphenyl)cinamic acid, 2-amino-, and 2-nitro-, A., 1497.
- α -Methoxy- α -2-methoxyphenylethane, β -bromo- β -nitro-, A., 616.
- α -Methoxy- α -4-methoxyphenylethylene, β -nitro-, A., 616.
- 4'-Methoxy-4-(*p*-methoxyphenyl)flavylum salts, A., 354.
- p*-Methoxy-*N*-methylacetanilide, A., 854.
- 3-Methoxy-5-methylbenzene-1:2:4-tricarboxylic acid, and its trimethyl ester and anhydride, A., 1238.
- 6-Methoxy-2-methyl-*p*-benzoquinone, 3-bromo-, A., 347.
- 4-Methoxy-2-methyl-5- β -dichloroethyl-6-carboxyphenylacetic acid, A., 748.
- 5-Methoxy-3-methyl-2-trichloromethyl-6-carboxymethylphthalide, A., 748.
- Methoxymethyltrichloromethylphthalides, A., 748.
- 2-Methoxy-2-methyl-5-chloromethyltetrahydrofuran, A., 352.
- 2-Methoxy-2-methyl-5-chloromethyltetrahydrofuran-3-carboxylic acid, methyl ester, A., 351.
- 2-Methoxy-2-methylchroman, A., 985.
- 4-Methoxy-2-methyldeoxybenzoin, semicarbazone of, and 4'-nitro-, A., 1242.
- 3-Methoxy-5-methyl-2:6-dicarboxymethylbenzoic acid, A., 748.
- Methoxymethyldihydrodihydroneobrucidine, methylation of, A., 1389.
- Methoxymethylchanodihydrostrychnanic acid, A., 1137.
- Methoxymethylchanodihydrostrychnonic acid, *penta*bromo-, hydrobromide, A., 1137.
- 2'-Methoxy-4'-methyldiphenyl-6-carboxylic acid, 2-nitro-, and its cinchonine salt, A., 1364.
- 2-Methoxy-3:4-methylenedioxy-5-bromophthalic acid, and its anhydride, A., 1513.
- 5-Methoxy-3:4-methylenedioxyphthalic acid, synthesis of, A., 213.
- 4'-Methoxy-5-methylflavylum chloride, 7-hydroxy-, A., 1129.
- 8-Methoxy-3'-methyl-7:6-furocoumarin, A., 986.
- 6-Methoxymethylhomopiperonyl- β -piperonylethylamine, A., 875.
- 2-Methoxy-2-methyl-5-methoxymethyltetrahydrofuran, A., 352.
- 7-Methoxy-1-methylnaphthalene, A., 618.
- 6-Methoxy-4-methylnaphthalene-2-carboxylic acid, and its esters, A., 618.
- Methoxymethylnaphthoic acid, synthesis of, A., 618.
- α -Methoxy- β -methyl-*n*-octane, A., 957.
- 7-Methoxymethyl-1:2-cyclopentenophenanthrenes, and their derivatives, A., 752.
- 3-Methoxy-5-methyl-*o*-phthalic acid, dimethyl ester and anhydride, A., 1238.
- 3-Methyl-6-methyl-*o*-phthalic acid, derivatives of, A., 343.
- 2-Methoxy-5-methylisopropenylbenzene, A., 343.
- 6-Methoxy-7-methylpurine, 2-chloro-, A., 1133.
- 4-Methoxy-2-methylquinoline, derivatives of, A., 1506.
- 6-Methoxy-2-methylquinoline, 4-amino-, and its picrate, A., 989.
- 6-Methoxy-8-methylquinoline hydrobromide, and its bromo-derivatives, A., 1506.
- 6-Methoxy-2-methyl-4-quinolylazide, and its hydrochloride, A., 989.
- 6-Methoxy-2-methyl-4-quinolylhydrazine, and its salts, A., 989.
- 6-Methoxy-4-methyl-1:2:3:4-tetrahydronaphthalene-2-carboxylic acid, and its esters and lactone, A., 618.
- Methoxymethyltetrahydronaphthoic acid, synthesis of, A., 618.
- 4-Methoxy-2-methylthiophenol, A., 79.
- 2'-Methoxy- α -naphthylflavone, and its sulpho-derivative, A., 91.
- 2'-Methoxy- β -naphthylflavone, A., 1129.
- 1-Methoxynaphthalene-2:4-dicarboxylic acid, and its derivatives, A., 1237.
- 2-Methoxy-3-naphthylamide, A., 858.
- β -6-Methoxy-1-naphthylethyl bromide, A., 752.
- 1-(β -6'-Methoxy-1'-naphthylethyl)-2:5-dimethyl-4'-cyclopentene, and its picrate, A., 752.
- 2-(β -6'-Methoxy-1'-naphthylethyl)-5-methylcyclopentanone-2-carboxylic acid, ethyl ester, and its semicarbazone, A., 752.
- Methoxy- β -*o*-nitrophenylethylcarbamie acid, methyl ester, A., 206.
- 7-Methoxy-1:2:3:4:9:10:11:12-octahydraphenanthrene, 1-hydroxy-, and its *p*-nitrobenzoate, A., 1499.
- α -Methoxypentane- β -ol, and its 3:5-dinitrobenzoate, A., 470.
- 8-Methoxy- Δ^8 -pentenonitrile, A., 1480.
- α -Methoxy- δ -cyclopentyl- Δ^8 -butinene, A., 73.
- β -Methoxy- γ -cyclopentyl- Δ^8 -pentinene, A., 73.
- 7-Methoxy-4-phenacylflavylum ferriehloride, A., 354.
- 2-Methoxyphenanthridine, 9-chloro-, A., 1507.
- 7-Methoxyphenanthridone, A., 1507.
- 4-Methoxyphenol, 2-amino-, hydrochloride, A., 484.

- 4-Methoxyphenoxyacetic acid-2-acetonitrile, and its methyl ester, A., 1130.
- 6-Methoxyphenoxyacetic acid-2-acetonitrile, and its ethyl ester, A., 1130.
- 6-Methoxyphenoxyacetic acid-2-chloroacetone, ethyl ester, A., 1130.
- 6-Methoxyphenoxyacetic acid-2:2':4'-O-dimethylphloracetophenone hydrate, A., 1130.
- 6-Methoxyphenoxyacetic acid-2:2':6'-O-dimethylphloracetophenone, A., 1130.
- 4-Methoxyphenoxyacetic acid-2-pyruvic acid, A., 1130.
- 6-Methoxyphenoxyacetic acid-2-pyruvic acid, and its oxime, A., 1130.
- Methoxyphenoxyacetic acid-2-resacetophenones, A., 1130.
- 4-(4'-Methoxyphenoxy)phenylpyruvic acid, 3:5-diiodo-, A., 976.
- o-Methoxyphenyl β -methylallyl ether, A., 483.
- m-Methoxyphenyl β -diethylaminoethyl sulphide, (P.), B., 1132.
- glyoxime peroxide, *p*-hydroxy-, acetyl derivative, A., 1362.
- 4-Methoxyphenylalanine, 3-hydroxy-, preparation of, A., 489.
- 2-*p*-Methoxyphenylbenzimidazole, (P.), B., 1120.
- 3-Methoxy-2-phenylbenzo-2-pyranol, and its ethyl ether, A., 1248.
- 6- and 7-Methoxy-2-phenylbenzopyranols, 4-ethyl ethers of, A., 1248.
- 4-Methoxyphenyl 4-benzoyloxystyryl ketone, 2-hydroxy-, A., 1120.
- γ -m-Methoxyphenylbutyramide, A., 1499.
- γ -m-Methoxyphenylbutyronitrile, A., 1499.
- 6'-Methoxy-4-phenyl-2:3-coumarone-(3':2')-chromylum chloride, 7-hydroxy-, A., 1130.
- 3-Methoxy-10-phenyl-9:10-dihydroglucosidone, and its salts, and nitroso-, A., 1382.
- 5-Methoxyphenyldihydroresorcinols, A., 744.
- 4-(Methoxyphenyl)-2:6-dimethyl-1:4-dihydropyridine-3:5-dicarboxylic acids, 4-nitro-, and 4-nitrohydroxy-, ethyl esters, A., 989.
- α -4-Methoxyphenylethane, $\alpha\beta$ -dibromo- β -nitro-, A., 616.
- β -2-Methoxyphenylethane, $\alpha\beta$ -dibromo- α -nitro-, A., 616.
- α -2-Methoxyphenylethanol oxalate, β -amino-, A., 616.
- β -m-Methoxyphenylethylacetoacetic acid, ethyl ester, A., 1496.
- β -4-Methoxyphenylethylamine, 3-amino-, and its derivatives, A., 337.
- α -2-Methoxyphenylethylene, β -bromo- β -nitro-, A., 616.
- β -m-Methoxyphenylethylcyclohexane-2:6-dione, A., 1499.
- Methoxyphenylethyl methyl ketone, and its semicarbazone, A., 752.
- β -O-Methoxyphenylethylpyridinium bromide, β -hydroxy-, A., 1131.
- 4-Methoxy-2-phenylethylquinazoline, A., 760.
- 3-Methoxy-9-phenylfluorene-9-thioglycolic acid, and its brucine salt, A., 857.
- 3-Methoxy-10-phenylglucosidone, and its salts and derivatives, A., 1382.
- m-Methoxyphenyl-2-glyoxalidylcarbinol, (P.), B., 287.
- 4(5)-*p*-Methoxyphenylglyoxaline, A., 1507.
- ζ -m-Methoxyphenyl- Δ^6 -hexen- γ -ol, and its 3:5-dinitrobenzoate, A., 752.
- α -*p*-Methoxyphenyl- β -(methyl- β' -diethylaminoethylamino)ethanol, production of, (P.), B., 840.
- p*-Methoxyphenyl-1-methyl-2-glyoxalidylcarbinol, (P.), B., 287.
- ζ -m-Methoxyphenyl- δ -methyl- Δ^6 -hexen- δ -ol, and its 3:5-dinitrobenzoate, A., 752.
- m-Methoxyphenyl α -nitroethyl ketoxime, *p*-hydroxy-, acetyl derivative, A., 1362.
- β -3-Methoxyphenylpropionic acid, ethyl and methyl ester, A., 752.
- methyl ester, A., 1492.
- β -4-Methoxyphenylpropionic acid, 3-amino-, and its derivatives, A., 337.
- α -m-Methoxyphenylpropyl alcohol, β -amino- α -*p*-hydroxy-, hydrochloride, acetyl derivative, hydrochloride, and diacetyl derivative, A., 1362.
- β -hydroxylamino- α -*p*-hydroxy-, acetyl derivative, hydrochloride, A., 1362.
- γ -m-Methoxyphenyl-*n*-propyl alcohol, and its 3:5-dinitrobenzoate, A., 752.
- α -m-Methoxyphenylpropyl acetate, β -nitro- α -*p*-hydroxy-, acetyl derivative, A., 1362.
- γ -m-Methoxyphenylpropyl methyl ketone, and its semicarbazone, A., 1496.
- o-Methoxyphenylpyruvic acid, cyano-, ethyl ester, A., 1238.
- 4-hydroxy-, A., 1388.
- 6-Methoxy-2-phenylquinoline-4-carboxylic acid, glycerol esters, (P.), B., 974.
- Methoxyphenyl styryl ketones, synthesis of, A., 85.
- influence of chemical constitution on tinctorial properties of, A., 86.
- 4-Methoxy-1-phenyl-1:4:5:6-tetrahydropyridazin-6-one, 5-bromo-, A., 991.
- Methoxyphenyltrimethylammonium salts, and their reduction by sodium amalgam, A., 76.
- 4-Methoxyphthalaldehyde acid, A., 490.
- 4-Methoxy-*o*-phthalic acid, 5-nitro-, methyl ester, A., 1361.
- 5-Methoxyphthalide, A., 490.
- α -Methoxypropionic acid, esters, and their derivatives, A., 730.
- β -dimethylaminoethyl ester, A., 730.
- synthesis of alkenes derived from, A., 730.
- 4-Methoxy-3-isopropylbenzaldehyde, A., 867.
- 6-Methoxy-2-propyl-*p*-benzoquinone, and 3-bromo-, A., 347.
- 5-Methoxy-2-isopropylcoumarone, and its picrate, A., 1128.
- 5-Methoxy-2-isopropylcoumarone-1-carboxylic acid, A., 1128.
- 9-Methoxy-9-*p*-*n*-propylphenylfluorene, A., 1358.
- Methoxypurines, rearrangement of, A., 1133.
- 2-Methoxypyridine, 3-amino-, A., 498.
- 4-Methoxypyridine, 3-amino-, 3-cyano-, and 3-nitro-, A., 97.
- Methoxypyrimidines, rearrangement of, A., 1133.
- 4-Methoxypyrocatechol, and its diacetate, A., 87.
- Methoxypyromethenes, synthesis of, A., 363.
- 6-Methoxyquinoline dicyanides, isomeric, A., 92.
- 6-Methoxyquinoline, 8-amino-, A., 990.
- 8-cyano-, A., 990.
- 4-(6'-Methoxy-8'-quinolylamino)pyridine, 3-amino-, and its *p*-dimethylaminobenzylidene derivative, and 3-nitro-, A., 226.
- 6-Methoxy-8-quinolyl ethyl ketone, A., 990.
- 3'-Methoxystilbene, 2:4-dinitro-2'- and -4'-hydroxy-, A., 619.
- 7-Methoxy-2-styrylchromone, A., 90.
- 2-*p*-Methoxystyryl-1:4- α -naphthapyrone, A., 1129.
- p*-Methoxysulphonic acids, reaction of, with bromine, A., 338.
- 4-Methoxytetrahydrofurfuraldehyde, dimethylacetal, A., 604.
- Methoxy- α - α -tetraphenyl- Δ^6 -pentinene, hydroxy-, A., 493.
- 8-Methoxy-1-thioflavone, chloride of, A., 91.
- 4-Methoxy-3:6-thionaphthenquinone, A., 1377.
- 3-Methoxytoluene, 2-amino-, and its benzoate, 4-amino-, and 2- and 4-iodo-, A., 757.
- 6-bromo-, A., 339.
- 2-cyano-4-hydroxy-, A., 1233.
- 4-Methoxytoluene-5-diazonium chloride, 2-amino-, benzoyl derivative, (P.), B., 985.
- 3-Methoxytoluene-6-sulphonic acid, *p*-toluidine salt, A., 79.
- 5-Methoxy-*o*-toluidine, 4-bromo-, A., 1506.
- 5-Methoxy-*p*-toluidine, 2-bromo-, and its acetyl derivative, A., 1506.
- 4-Methoxy-2-tolyl alkyl sulphides, A., 79.
- 5-Methoxy-2-tolylglutamic acid, A., 353.
- β -5-Methoxy-2-tolylglutamic acid, and its derivatives, A., 343.
- 3-5'-Methoxy-2'-tolylpyridine, 2:6-dihydroxy-, and its dibenzoyl derivative, A., 343.
- 4-Methoxy-2-tolylthioacetic acid, A., 79.
- 5-Methoxy-4:4':5'-trimethyl-3-ethylpyromethene, 3'-bromo-, A., 633.
- 5'-Methoxy-4:5:4'-trimethyl-3-ethylpyromethene, 3'-bromo-, A., 633.
- 10-Methoxy-9:9-10-triphenylacenaphthene, A., 858.
- 5-Methoxytriphenylacetic acid, 2-hydroxy-, (2-yl)lactone, A., 80.
- Methoxy-*m*-xyloquinone, bromo-, A., 982.
- 3-Methoxy-*p*-xyloquinone, A., 982.
- Methyl alcohol, liquid structure of, A., 572.
- synthesis of, from water-gas, B., 12, 91.
- zinc oxide-chromium oxide catalysts for, B., 583.
- production of, (P.), B., 297.
- electric moment of, A., 567.
- photochemical dissociation of, A., 1211.
- aqueous, ionisation constant of acetic acid in, A., 1321.
- solubility of strong electrolytes in, A., 1314.
- compressions and specific volumes of, A., 1317.
- partition coefficients of, for the systems castor oil-water and triricinolein-water, A., 696.
- addition of, to dialkylacetylenes, A., 1480.
- structure of catalysts for, B., 795.
- copper catalysts for, A., 175.
- oxide catalysts for decomposition of, A., 175.
- thermal decomposition of, A., 40.
- slow oxidation of, A., 172.
- catalytic oxidation of, to formaldehyde, B., 442.
- reaction of, with acetic acid, A., 43.
- with hydrogen chloride, A., 828.
- with nitrous oxide, A., 172.
- manufacture of acetic acid from, (P.), B., 347.
- effect of, on blood-pressure, A., 655.
- detection of, in ethyl alcohol with vanillin, B., 137.
- detection and determination of, B., 539.
- determination of, in air, B., 1120.
- in alcoholic products, B., 1017.
- in blood and tissues, A., 1044.
- in essential oils, B., 828, 1023.
- in ethyl alcohol and beverages, B., 424.

- Methyl alcohol**, determination of, in mixtures with ethyl and propyl alcohols, B., 539.
in formaldehyde, B., 1084.
- Methyl bromide**, thermodynamic properties of, A., 1461.
chloride, electron diffraction structure of, A., 572.
manufacture of, (P.), B., 618.
infra-red spectrum of, A., 145.
poisoning by. See under Poisoning.
chlorosulphonate, action of, on methyl acetate, A., 733.
compounds of metals, interchange of heavy atoms in, A., 851.
 α -cyanomethyl carbonate, A., 1223.
deuteride, Raman spectra of, A., 1446.
ether, electron diffraction structure of, A., 572.
production of, (P.), B., 13.
adsorption of, by alumina, A., 696, 1457.
chloro-, dipole moment of, A., 13.
groups, angular, action of selenium on compounds containing, A., 968.
identification of, as dimethyl ditelluride, A., 62.
detection of, colorimetrically, with picric acid, A., 228.
halides, band spectra of, A., 1053.
hydrogen peroxide, and hydroxy-, A., 1222.
hydrogen selenite, A., 1231.
hydrogen sulphide, liberation of, by seaweeds, A., 1042.
iodide, structure, ionisation, and ultra-violet spectrum of, A., 562.
absorption spectrum of, A., 1188.
photo-dissociation of, A., 1468.
vapour, thermal decomposition of, A., 587.
phosphates, antirachitic activity of glycerophosphates, lecithin, and, A., 238.
sulphate, action of, on acetyl chloride, A., 733.
tetraortho-silicate, A., 326.
- Methyl-(β -1-acenaphthylethyl)- Δ^1 -cyclohexene**, and its picrate, A., 969.
- o*-Methylacetophenone**, ω -bromo-, ω -chloro-, and ω -hydroxy-, acetyl derivative, and its semicarbazone, A., 1236.
- p*-Methylacetophenone** *m*-nitrobenzhydrazide, A., 743.
p-nitrobenzoylhydrazone, A., 1259.
o-tolylsemicarbazone, A., 1259.
- Methylacetylene**, Raman effect of, A., 146.
- Methylacridan-acridinium methochloride**, A., 1254.
- α -Methylacrylic acid**, esters, production of, (P.), B., 620.
ethylene glycol ester, manufacture of, (P.), B., 368.
 β -methoxyethyl and β -phenoxyethyl esters, A., 960.
- α -Methylacrylonitrile**, polymerisation of, (P.), B., 13, 263.
for safety glass interlayers, (P.), B., 93.
synthesis of 1-cyano-1-methylcyclopropane from, A., 210.
- Methylal**, use of, for inclusions in paraffin, A., 1043.
as solvent in analysis, A., 182.
- Methylalloxazines**, A., 1510.
- 2-*O*-Methyl-4-*O*-allyl-5-allylresacetophenone**, A., 863.
- 4-Methyl-8-allylcoumarin**, 7-hydroxy-, A., 863.
- 4- β -Methylallyl-*m*-cresol**, and its acetate, A., 483.
- 3- β -Methylallylcresols**, and their salts, A., 483.
- 6- β -Methylallyldimethylphenols**, A., 483.
- 6- β -Methylallylguaiacol**, A., 483.
- α - β -Methylallylphenol**, and its acetate, and *p*-nitrobenzoate, A., 483.
- 2- β -Methylallylphenyl**, 4-chloro-, A., 483.
- α - β -Methylallylphenyl β -methylallyl ether**, A., 483.
- 2- β -Methylallyl-4-isopropyl-*m*-cresol**, A., 483.
- 2-*O*-Methyl-4-*O*-allylresacetophenone**, A., 863.
- 2-*O*-Methyl-6-allylresacetophenone**, and its 4-*O*-methyl ether, A., 863.
- N*-Methylaloperine hydriodide methiodide** and methiodide, A., 635.
- 3-Methylaltrosazone**, A., 1225.
- α -Methylaltroside**, A., 1225.
- Methylamine**, manufacture of, (P.), B., 262.
ultra-violet absorption spectrum of, A., 563.
vapour, ultra-violet absorption spectrum of, A., 1052.
adsorption of, by silica gel, alumina gel, and charcoal, A., 29.
thermal decomposition of, A., 1081.
thermal oxidation of, A., 172.
plato- and plati-diammines containing, A., 1229.
detection of, in presence of ammonia, A., 1516.
- Methylamines**, manufacture of, (P.), B., 182.
- Methylaminoacet-*o*-toluidide**, and its derivatives, A., 1386.
- 5-Methylaminoacetyl-2:4-dimethylpyrrole**, and its hydrochloride, A., 221.
- 4-Methylaminoanthraquinone-2-sulphonic acid**, 1-amino-, production of, (P.), B., 895.
- β -Methylamino- α -benzylethyl ethyl ether**, and its salts, A., 81.
- 1-Methylamino-4-2':3'-dicarboxyanilinoanthraquinone**, manufacture of, (P.), B., 722.
- 1-Methylamino-4-1':8'-dicarboxy-3'-naphthylthiolanthraquinone**, manufacture of, (P.), B., 722.
- γ -Methylamino- α -dimethylaminobutane**, and its picrate, A., 478.
- N*- γ -Methylamino- β -dimethyl-*n*-propyl-*o*-anisidine**, and its dihydrochloride, A., 482.
- 2-Methylaminodiphenyl ether**, 2':4'-*d*-nitro-, A., 1491.
- 2'-Methylaminodiphenyl sulphide**, 2-nitro-, and its derivatives, A., 485.
- β -Methylamino- α -diphenylpropanols**, and their salts, A., 209.
- Methylaminodiphenylsulphone**, 2-nitro-, benzenesulphonyl derivative, A., 485.
- 4- β -Methylaminoethylglyoxaline**, and its hydrochloride and picrate, (P.), B., 830.
- 4(5)- β -Methylaminoethylglyoxaline**, salts, A., 759.
- 4-Methylamino-5-hydroxy-7-acetyl-1:3:9-trimethyl-4:5-dihydric acid**, A., 361.
- 1-Methylamino-4- β -hydroxyethylaminoanthraquinone**, 5-amino-, and 5:8-diamino-, manufacture of, (P.), B., 1134.
- γ -Methylamino- β -hydroxypropanesulphonic acid**, A., 1111.
- 9- β -Methylamino- α -hydroxy-*n*-propyl-1:2:3:4:5:6:7:8-octahydrophenanthrene**, and its salts, A., 973.
- α -Methylamino- β -3-indolepropionic acid**, and its picrate, A., 1015.
- Methyl-2-aminomethylenecyclohexanones**, A., 628.
- 4-Methylamino-1:2-naphthaquinone**, A., 585.
- Methyl-*p*-aminophenol**, preparation of, A., 744.
purification of, (P.), B., 761.
- β -Methylamino- α -phenylethanol**, production of, (P.), B., 783.
- Methylaminophenylethylacetoneitrile**, and its hydrochloride, (P.), B., 830.
- β -Methylamino- α -phenylpropyl alcohol**, manufacture of, (P.), B., 262.
- 4-Methylamino-1-phenyl-1:4:5:6-tetrahydropyridazin-6-one**, 5-bromo-, A., 991.
- β -Methylaminopropion-*o*-toluidide**, and its hydrochloride, A., 1386.
- 9- α -Methylaminopropionyl-1:2:3:4:5:6:7:8-octahydrophenanthrene**, and its salts, A., 973.
- 4-Methylaminopyridine**, 3-nitro-, A., 993.
- Methylaminothiomethanesulphonic acid**, potassium salt, A., 332.
- 5-Methylamino-*o*-xylene**, 4-amino-, and its dihydrochloride and 4-nitro-, A., 94.
- N*-Methylammodendrine**, and its salts, A., 1387.
- Methylammonium alum**, structure of, A., 686.
- C*-Methyl-*C*-isoamyl-*N*-allylbarbituric acid**, manufacture of, (P.), B., 1165.
- Methyl-*n*-amylcarbamide**, A., 1155.
- Methyl amyl ketone cyanohydrin**, A., 611.
- 1-Methylanabasine**, 6'-chloro-, A., 635.
- 17-Methylandrostande**, 3-*epi*hydroxy-17-hydroxy-, A., 1125.
- 1-Methylanhydrocarnine**, derivatives of, A., 767.
- 1-Methylanhydrocarnine**, 1-amino-, and its salts and acetyl derivative, A., 767.
- Methylaniline hydrobromide**, rearrangement of, A., 76.
- Methylanilino*di*chloroarsine**, A., 1139.
- δ -Methylanilino- β - β -dimethyl-*n*-heptane**, and its hydroferrocyanide, A., 736.
- γ -*N*-Methylanilino- Δ^7 -heptene**, A., 742.
- N*-Methylanilino- Δ^1 -cyclohexene**, A., 742.
- γ -Methylanilino- β -hydroxypropanesulphonic acid**, A., 1111.
- α -*N*-Methylanilino-*p*-methoxystyrene**, A., 742.
- α -*N*-Methylanilino-*p*-methylstyrene**, A., 742.
- γ -Methylanilino-*n*-pentane**, A., 736.
- α -*N*-Methylanilinostilbene**, A., 742.
- α -*N*-Methylanilinostyrene**, A., 742.
- β -*N*-Methylanilinostyrene**, A., 742.
- γ -*N*-Methyl-*p*-anisidino- Δ^7 -heptene**, A., 742.
- α -*N*-Methyl-*p*-anisidino-*p*-methylstyrene**, A., 742.
- α -*N*-Methyl-*p*-anisidinostyrene**, A., 742.
- 5-Methylanisole**, 2-iodo-, A., 1364.
- Methylanisylcarbamides**, A., 1488.
- 1-Methylantraquinone**, 2-chloro-, (P.), B., 622.
- 2-Methylantraquinone**, 1-chloro-, production of, (P.), B., 487.
- 3-Methylantraquinone**, dibromo-1:6:8-*tri*-hydroxy-, A., 1238.
1-hydroxy-, acetyl derivative, A., 495.
- 4-Methylantraquinone**, 1-amino-2-chloro-, manufacture of, (P.), B., 717.
- 6-Methylantraquinone**, 1-hydroxy-, acetyl derivative, A., 495.
- 3-Methylantraquinone-2-carboxylic acid**, 1:6:8-*tri*hydroxy-. See Endocrocin.
- Methyl- β -1-anthraquinonyloxyethylsulphone**, A., 1490.
- α - and β -Methyl-*l*-arabinomethylsides**, A., 476.
- 7-Methyl-9-*l*-1'-arabitylisoalloxazine**, A., 760.
- 7-Methyl-9-*l*-1'-araboisalloxazine**, A., 359.
- Methylatropine**, determination of, B., 1022.
- o*-Methylazomethylaniline**, A., 360.

- O*-Methylbebeerilene, A., 1514.
O-Methylbebeerine methochloride, and its derivatives, A., 1138.
O-Methylbebeerinemethine methiodides, A., 1514.
7-Methyl-2:3-benzacridine-1:4-quinone, 10-chloro-, and 7:10-dichloro-, (P.), B., 622.
2-Methylbenzanthrone, manufacture of, (P.), B., 220.
Methylbenzodioxan, amino-, derivatives, action of, on nictating membrane of cats, A., 525.
analgesic and sedative action of, A., 245.
1-hydroxy-, and its derivatives, (P.), B., 124.
2-Methyl-6:7-benzhydryndone, A., 1359.
o-Methylbenzoin, A., 494.
p-Methylbenzophenone 2:4-dinitrophenylhydrazine, A., 78.
5-Methylbenzophenone, 2-amino-, hydrochloride, A., 760.
5-Methylbenzoylcarbinol, 2-hydroxy-, A., 1507.
2'(3')-Methyl-1:2-benzpyrene, A., 968.
4'-Methyl-1:2-benzpyrene, and its picrate, A., 741.
1-Methylbenzselenaetho-*p*-toluenesulphonate, A., 631.
2-Methylbenzthiazole, synthesis of indirubin types by condensation of, with isatins, A., 1386.
2-Methylbenzthiazole, 6-bromo-, A., 1386.
3-Methylbenzthiazole, 1-amino-, (P.), B., 1134.
5-Methylbenztriazole, 1-nitro-, (P.), B., 1132.
Methyl-1:2:3-benztriazoles, A., 360.
p-Methylbenzyl mercaptan, A., 1390.
N-Methyl-*N*-benzylneobrucidinum dichloride and diiodide, A., 1389.
Methyl-4:6-benzylidene- α -methylhexoside, A., 964.
Methylbenzylmalonic acids, bromo-, A., 853.
1-*o*-Methylbenzyl-naphthalene, 2:7-dihydroxy-, A., 1231.
3-(6-Methylbenzyl)-3:4:5:6-tetrahydronorharman, 3-(3-hydroxy-6-hydroxy-), hydrochloride, A., 1389.
Methylbindone, bromo-, chloro(chloro)-, and nitro-, A., 623.
N-Methylbiscotarnylideneacetone, and its salts, A., 1388.
N-Methyl-*p*-bromobenzenesulphon-*p*-aniside, A., 193.
2-Methyl-3- β -bromoethylindole, A., 1379.
Methylbromohydrindene, A., 481.
Methylbromohydrindones, A., 481.
Methyl- β -bromo- β -sulphino-*n*-propylsulphone, A., 1350.
 β -Methyl- Δ^{β} -butadiene, δ -chloro-, A., 605.
 β -Methylbutane, $\alpha\delta$ -diamino-, complex gold salts of, A., 1228.
 β -dithiol-, A., 1480.
 β -Methylbutane- β -sulphonic acid, and its salts, A., 472.
 γ -Methylbutane- $\alpha\gamma$ -tricarboxylic acid, triethyl ester, A., 1246.
 β -Methylbutan- α -ol, A., 852.
 β -Methylbutan- γ -one, α -nitro- β -hydroxy-, and its semicarbazone, A., 348.
 β -Methyl- Δ^{α} -butenal, formation of chain of carotenoids by condensation of, A., 1353.
 β -Methyl- Δ^{β} -bnten- α -yl acetate, A., 852.
 β -Methyl- Δ^{γ} -butinene, β -chloro-, A., 605.
 α -Methylbutyl methoxyacetate, A., 473.
5- α -Methylbutyl-5-allyl-2-thiobarbituric acid, A., 1507.
Methylisobutylamine, α -bromo-, hydrobromide, A., 736.
 α -Methylisobutylamines, and their derivatives, A., 736.
 α -Methylisobutylamines, β -hydroxy-, and their salts and derivatives, A., 737.
N-Methyl-*sec*-butylamine, and its salts, A., 1481.
1-Methyl-4-*tert*-butylbenzoic acid, and its nitrile, A., 342.
Methyl-*n*-butylcarbamide, A., 1155.
4-Methyl-3-isobutylcoumarin, 6-chloro-7-hydroxy-, A., 1504.
 β -Methyl- Δ^{β} -butylene, oxidation of, A., 852.
 β -Methyl- Δ^{γ} -butylene, β -thiol-, and its mercury salt and disulphide, A., 1480.
 γ -Methyl- Δ^{α} -butylene, α -mono- and $\alpha\alpha$ -dibromo-, A., 1105.
Methyl-*n*-butylglyoxime, and its nickel derivative, A., 980.
N-Methyl-*N*-*sec*-butylhydroxylamine, and its hydrochloride, A., 1481.
N-Methyl-*N*-*tert*-butylhydroxylamine, and its oxalate, A., 1481.
Methyl *n*-butyl ketone *N*-nitroguanylimine, A., 769.
1-Methyl-7-*tert*-butylnaphthalene, synthesis of, and its derivatives, A., 342.
4-Methyl-6-*tert*-butyl-2-naphthoic acid, synthesis of, A., 342.
Methyl-*n*-butyl-*n*-octylcarbinol, manufacture of, (P.), B., 348.
6-Methyl-4-*tert*-butylphenol, manufacture of, (P.), B., 716.
4-Methyl-6-*tert*-butyl-1:2:3:4-tetrahydro-2-naphthoic acid, A., 342.
 α -Methyl-*n*-butyric acid, α -hydroxy-, ethylidene and methylene esters, A., 731.
 β -Methylbutyric acid, $\alpha\alpha\beta$ -tribromo-, A., 1105.
7-Methylcafolide, A., 361.
Methylcampholenitrile, semicarbazone of, and its isomeride, A., 625.
Methylcarbamide, rate of formation of, from methylammonium cyanate in ethyl alcohol, A., 1208.
flavinate, A., 639.
Methylcarbamidomethyleneacetacetic acid, ethyl ester, A., 358.
Methylcarbamidophenylethylacetoneitrile, production of, (P.), B., 830.
6-Methylcarbazole, 3-amino-, A., 226.
9-Methylcarbazole, A., 990.
 α -Methyl-*N*-carbobenzylloxylglutamato-cysteine ethyl ester, A., 1111.
Methyl α -carbomethoxyethyl carbonate, (P.), B., 716.
Methylcellulose, characterisation of, A., 1356.
fusion of, A., 1356.
sol-gel transformation of, in water, A., 822.
p'-Methylchalkone, A., 1369.
Methyl α -chloro- γ -ethoxypropyl ketone, and its platinumchloride, A., 1511.
4-Methyl-5- β -chloroethylthiazole, salts, A., 1511.
2-Methyl-5-chloromethyl-4:5-dihydrofuran-3-carboxylic acid, and its methyl ester, A., 351.
Methyl-2-trichloromethylphthalides, 4:6-dibromohydroxy-, A., 748.
hydroxy-, and their acetyl derivatives, A., 748.
Methyl γ -chlorophenoxypropyl ketones, and their semicarbazones, A., 1242.
1-Methyl-2-(6'-chloro-3'-pyridyl)piperidine, A., 764.
Methylcholanthrene, A., 1117.
preparation of, from cholic acid, A., 859.
synthesis of, A., 480.
and its picrate, A., 852.
Methylcholines, A., 849.
 β -Methylcholine, and its acetyl ester, A., 849.
2-Methylchroman, A., 985.
2-Methylchromane, 5:7-dihydroxy-, 7-benzyl ether, A., 90.
 β -Methylcinnamylurethane, A., 486.
Methylcoumaran, amino-, derivatives, action of, on nictating membrane of cats, A., 525.
4-Methylcoumarin 7-*O*-allyl ether, 7-hydroxy-, A., 863.
4-Methylcoumarin, 6-mono- and 3:6-dichloro-7-hydroxy-, and 8-nitro-7-hydroxy-, and their acetyl derivatives, A., 1504.
Methylcoumarinacetic acids, A., 353.
4-Methylcoumarin-3-acetic acid, 6-chloro-7-hydroxy-, ethyl ester, A., 1504.
7:8-dihydroxy-, ethyl ester, A., 1503.
p-Methylcresol, condensation of, with acetonedicarboxylic acid, A., 343.
Methylemarolactones, A., 1485.
Methylemaronic acids, phenylhydrazides of, A., 1485.
Methylemaropyranoside, and its methyl ester, A., 1485.
Methyl-*p*-cymene, 3-chloro-, A., 75.
trans-3-Methyl- α -decalone, and its semicarbazone, A., 1240.
2-Methyldeoxybenzoin, 4'-nitro-4-hydroxy-, A., 1242.
2'-Methyldeoxybenzoin, and its 2:4-dinitrophenylhydrazine, A., 1242.
Methyl-2-deoxyriboside, A., 1354.
Methyldiacridine, A., 1254.
10-*N*-Methyldiacridylum salts, A., 1254.
1-Methyldibenzofuran-8-carboxylic acid, and its methyl ester, A., 985.
m-Methyldibenzoylmethane, A., 493.
Methyl- $\alpha\alpha$ -di-*n*-butylcarbamide, A., 1155.
6-Methyl-2:4-di-*tert*-butylphenol, manufacture of, (P.), B., 716.
7-Methyl-4:5-dicoumaryl, A., 353.
Methyl- β -diethylaminoethylaniline, and its picrate, (P.), B., 940.
Methyldiethylarsine mercurichloride, A., 738.
Methyl- $\alpha\alpha$ -diethylcarbamide, A., 1155.
Methyldiethylcarbinol, Raman spectrum of, A., 681.
8-Methyl-2:2'-diethyl-5:6:5':6'-dibenzothiacarbocyanine iodide, A., 631.
8-Methyl-2:2'-diethyloxacarbocyanine iodide, A., 631.
8-Methyl-2:2'-diethylselenacarbocyanine iodide, A., 631.
5-Methyl-2:1'-diethylthia-2'-pyrazinocarbocyanine iodide, (P.), B., 1037.
3-Methylspirodihydantoin, A., 225.
4-Methyl-1':2'-dihydro-1:2-benzpyrene, A., 741.
N-*b*-Methylchanodihydrobrucine, and its derivatives, A., 367.
Methyldihydrocediketonucidine, dihydroxy- ω -hydroxy-, and its derivatives, A., 506.
10-Methyl-9:10-dihydroglucosazidone, A., 1382.
Methyldihydroxydeoxyketonucidine, dihydroxy- ω -hydroxy-, and its acetate and anhydride, A., 506.
1-Methyl-3:4-dihydronaphthalene, A., 1497.
5-Methyl-5:8-dihydronaphtha-1:4-quinol, and its diacetate, A., 863.
6-Methyl-1:2-dihydroquinoline, 2-hydroxy-1-cyano-, and its derivatives, A., 93.
1-Methyldihydroquinolyl-2:2'-indan-1:3-dione, production of, (P.), B., 894.
1'-Methyldihydroquinolyl-2:2'-indan-1-one, production of, (P.), B., 894.

- 1-Methyldihydrosantene, A., 866.
 9-Methyldihydric acid, 4-chloro-5-hydroxy-, and its acetyl derivative, A., 361.
 2-Methyl-1:4-diketodihydronaphthalene 2:3-oxide, A., 495.
 Methyldiketohydrindene oxime, ethyl and methyl ethers of, A., 980.
 3-Methyl-1:2-diketohydrindene, and its dioxime, A., 980.
 oxime, zinc salt of, A., 981.
N-Methyl-*N*-2:5-diketo-1-methyl- Δ^3 -imidazolyl-4-carbamide-*N'*-carboxylic acid, and its derivatives, A., 95.
 3-Methyl-6- α -diketopropylbenzoic acid, A., 1243.
 2-Methyl-3- β -dimethylaminoethylindole, and its derivatives, A., 1379.
 7-Methyl-8:9-dimethylene-1:2-benzanthracene, and its picrate, A., 853.
 β -Methyl-3:6-dimethylglucoside, A., 477.
 3-Methyl-6-(α -dimethyl- Δ^8 -hexenyl)-benzoquinone, 2-hydroxy-, A., 1501.
 Methyl α -dimethyl-*n*-hexyl ketone, and its semicarbazone, A., 847.
 2-Methyldiphenyl, 6-amino-, and its hydrochloride, 6-iodo-, and 6-nitro-, A., 211.
 2- and 3-Methyldiphenyls, 4-hydroxy-, and their derivatives, A., 1361.
 4'-Methyldiphenyls, nitro-, oxidation of, with chromyl chloride, A., 344.
 3'-Methyldiphenyl sulphide, 2-nitro-4'-amino-, and its hydrochloride, A., 1359.
 5'-Methyldiphenyl sulphide, nitroamino-derivatives, and their hydrochlorides, A., 1359.
N-Methyldiphenylamine, 2':4'-dinitro-2-hydroxy-, A., 1491.
 3'-Methyldiphenylamine, 5-chloro-2-nitro-, A., 1489.
 2-Methyldiphenyl-2-carboxylic acid, 2-cyano-, A., 1361.
 2-Methyldiphenylene oxide, A., 757.
 Methyl- α -di-*n*-propylcarbamide, A., 1155.
 3-Methyldisopropylideneoglucose, A., 68.
 α -Methyl-2:3-5:6-diisopropylidenemannofuranoside, A., 1108.
 α - and β -Methyl-2:3-4:6-diisopropylidene mannopyranosides, A., 1108.
 Methyldivinylacetylenylearbinol, A., 471.
 7-Methyl-9- β -1'-dulcitolylisalloxazine, A., 631, 760.
 Methylene, formation of, and its compound with tellurium, A., 62.
 Methylene chloride, electron diffraction structure of, A., 572.
 compounds, cyano-activated, condensation of, with benzoylformanilide, A., 1365.
 groups, detection of, colorimetrically, with picric acid, A., 228.
 Methyleneamines, cyclic, action of benzoyl chloride and hydrogen sulphide on, A., 1385.
p-Methyleneaminoacetophenone, and ω -hydroxy-, and its acetyl derivative, A., 622.
 3-Methyleneaminopyridine, A., 498.
 α -Methylenebis-8-hydroxy-5-propionylquinoline, and its derivatives, A., 622.
 Methylene blue, crystal structure of, A., 1195.
 photochemical oxidation-reduction in solutions of, A., 1087.
 oxidation-reduction of, in transmissible lysis, A., 900.
 and acid fuchsin, staining of subcutaneous tissues with, A., 378.
 photodynamic action of, on plant viruses, A., 269.
 Methylene blue, non-formation of methaemoglobin from, A., 1158.
 effect of, on basal metabolism, A., 1159.
 on tumours, A., 515.
 Methyleneccamphor, hydroxy-, benzoates, catalytic reduction of, A., 625.
 1':9'-Methylene-1:2:5:8-dibenzanthracene, A., 1359.
 Methyleneedicarbamic acid, β -chloroethyl ester, A., 1228.
 Methyleneedicarbamylocholone dichloride, and its platinum chloride compound, A., 1228.
 Methylene-2:4-diketo-3-methylhydrindane, A., 1495.
 3:4-Methylenedioxy- β -amino- α -hydroxy-*n*-propylbenzene hydrochloride, A., 971.
 2:3-Methylenedioxybenzyl alcohol, A., 860.
 3:4-Methylenedioxy-*N*-benzylnorephedrine, A., 1493.
 3-(3:4-Methylenedioxybenzyl)-3:4:5:6-tetrahydronorharman hydrochloride, A., 1388.
 3-(3:4-Methylenedioxybenzyl)-3:4:5:6-tetrahydronorharman-3-carboxylic acid, A., 1388.
 3:4-Methylenedioxy-cinnamic acid, methyl ester, A., 1492.
 3:4-Methylenedioxy- γ -*cis*-cinnamylideneacetic acid, γ -bromo- α -cyano-, methyl ester, A., 747.
 3:4-Methylenedioxy-cinnamylidenecyanoacetic acid, ethyl and methyl esters, A., 747.
 3:4-Methylenedioxy- γ -*cis*-cinnamylidenemalonamic acid, and γ -bromo-, dimethyl esters, A., 747.
 2:3-Methylenedioxy-11:12-dimethoxyoxyprotoberberine, synthesis of, A., 767.
 6:7-Methylenedioxy-1:3-dimethylisoquinoline, A., 972.
 3':4'-Methylenedioxyisoflavone, 7-hydroxy-, benzyl ether, A., 91.
 Methyleneedioxy-groups, fission of, A., 1492.
 3:4-Methylenedioxy-*N*-homopiperonylnorephedrine, A., 1493.
 6:7-Methylenedioxy-10-methylphenanthridone, A., 1387.
 3:4-Methylenedioxy- α -*di*-oximino-*n*-propylbenzene, A., 971.
 6:7-Methylenedioxyphenanthridine, and its methiodide, A., 1388.
 3:4-Methylenedioxy- α -*trans*- γ -*cis*- δ -phenylbutadiene- α -carboxylic acid, A., 747.
 4-(3':4'-Methylenedioxyphenyl)-2:6-dimethyl-1:4-dihydropyridine-3:5-dicarboxylic acid, and 4-6'-bromo-, chloro-, and nitro-, A., 939.
 α -3:4-Methylenedioxyphenylethane, α , β -dibromo- β -nitro-, A., 616.
 α -3:4-Methylenedioxyphenylethanol hydrogen oxalate, β -amino-, A., 616.
 3':4'-Methylenedioxyphenyl-2-glyoxalidylcarbinol, (P.), B., 287.
 α -3:4-Methylenedioxyphenylpropan- α -ol, β -amino-, and its acetyl derivative, and their derivatives, A., 972.
 β -3:4-Methylenedioxyphenylpropionic acid, methyl ester, A., 1492.
 α -3:4-Methylenedioxyphenylpropyl acetate, β -hydroxylamino-, hydrochloride and methylene nitron, and β -nitro-, A., 972.
 3:4-Methylenedioxy- β -piperonylideneamino- α -hydroxypropylbenzene, A., 972.
 3:4-Methylenedioxypropionophenone oxime, A., 971.
 3':4'-Methylenedioxy stilbene, 2:4-dinitro-, A., 619.
 6:7-Methylenedioxy-2-thion-3-phenyl-3:4-dihydroquinazoline, A., 630.
 6:7-Methylenedioxy-2-thion-3-tolyl-2:3-dihydroquinazolines, A., 630.
 1:5-*endo*Methylenecycloheptane-2:4-dione, and its semicarbazone, A., 1245.
 α -Methylenheptonitrile, A., 611.
 2:5-*endo*Methylenhexahydrobenzoic acid, and its derivatives, A., 219.
 and 3-hydroxy-, derivatives of, A., 341.
 3:6-*endo*Methylenhexahydrophthalic acids, *mono*- and *di*-hydroxy-, and their lactones, and their derivatives, A., 211.
 Methylenecyclohexanone, 2-amino-, A., 628.
 Methylene ketones, hydroxy-, and their reaction products, A., 608, 733, 751.
 action of organomagnesium compounds on, A., 609.
 synthesis of quinoline bases from, A., 989.
 Methylenemethylheptenone, hydroxy-, reaction of, with Grignard reagents, A., 329.
 3-Methyleneoxindole, 3-diamino-, diformyl derivative, A., 758.
 Methylene-tartaric acid, and its dimethyl ester, rotation of, A., 1192.
 2:5-*endo*Methylene- Δ^3 -tetrahydrobenzoic acid, constitution of, and its reduction, A., 341.
 3:6-*endo*Methylene- Δ^4 -tetrahydrophthalic acids, reaction of, with phenyl azide, A., 350.
 Methylephedrine hydrobromides, hydrochlorides, and hydriodides, crystal structure of, A., 152.
 2-Methylepoxycyclopentanes, A., 852.
dl-Methyleserethole, A., 227.
 4-Methyl-5- β -ethoxyethylthiazole, and its platinum chloride, A., 1510.
dl-Methylethylacetic acid, derivatives of, A., 1230.
 2'-Methyl-1-ethyl-5:6-benz-2:1'-cyanine iodide, A., 224.
 2'-Methyl-2-ethyl-3:4-benzthiacyanine iodide, A., 224.
 Methylethylbenztriazolium picrates, A., 360.
 3-Methyl-3'-ethyl-4- β -carboxyethylpyrromethene, 5-bromo-, hydrobromide, and its derivatives, A., 633.
 4-Methyl-3-ethylcoumarin, 6-chloro-7-hydroxy-, and its acetyl derivative, A., 1504.
 Methyl-1-ethylcyanine iodides, A., 224.
s-Methylethylthylene oxide, and its reaction with zinc chloride, A., 194.
 β -Methyl- α -ethyl-*n*-hexoic acid, and its derivatives, (P.), B., 749.
 β -Methyl- α -ethylhexoylethylcarbamide α -bromo-, (P.), B., 749.
 1-Methyl-1-ethylhomophthalic acid, and its anhydride, A., 481.
 1-Methyl-1-ethylindane, A., 481.
 Methyl ethyl ketone, physical constants of, and its additive compound with sodium iodide dihydrate, A., 22.
 reaction of, with phosphorus pentachloride, A., 62.
p-nitrobenzoylhydrazone, A., 1259.
N-nitroguanilimine, A., 769.
o-tolylsemicarbazone, A., 1259.
 analysis of, B., 663.
 determination of, A., 102.
 Methylethyl- α - β -naphtha-1:2:3-triazolium iodides, A., 359.
 Methylethyl- β - γ -oxido-*n*-propylsulphonium iodide, A., 728.
 Methylethylphenols, compounds of, with cincole and *m*-5-xyldine, A., 744.
 2-Methyl-3-ethylpyrrole-5-carboxylic acid, and 4-bromo-, ethyl esters, A., 1134.
 3-Methyl-4-ethylpyrrole-2-carboxylic acid, and its methyl ester, A., 632.

- 3-Methyl-4-ethylpyrrole-2-carboxylic acid, 5-bromo-, A., 632.
- 3-Methyl-4-ethylpyrrole-5-carboxylic acid, and its esters, and 2-bromo-, A., 632.
- 2-Methyl-2-ethylselenacyanine iodide, A., 224.
- β -Methyl- α -ethylvalerylcarbamide, (P.), B., 749.
- Methylvinylethylcarbinol, manufacture of, (P.), B., 347.
- Methylugenol, Raman spectrum of, A., 807.
- Methylisoeugenol derivatives, A., 972.
- 8-Methylflavone, chloride of, A., 91.
- 2-Methyl-4-*p*-fluorophenylthiazole, and its derivatives, A., 1385.
- β -Methylfructose tetraacetate, A., 735.
- β -Methylfructoside 3-acetate, A., 735.
- Methylfurfuraldehyde, condensation of, with phloroglucinol, and its separation from furfuraldehyde and hydroxymethylfurfuraldehyde, A., 769.
- and its hydroxy-derivative, determination of, B., 91.
- Methylfurfuraldehyde, hydroxy-, fate of, in frogs, A., 1154.
- determination of, in port and sweet wines, B., 871.
- separation of, from furfuraldehyde and methylfurfuraldehyde, A., 709.
- Methylfurfuraldehyde ether, ω -hydroxy-, A., 756.
- 3'-Methyl-7:6-furocoumarin, A., 986.
- Methylfustin, A., 757.
- α -Methylgalacturonic acid, methyl ester, reduction of, A., 196.
- β -1-Methylgalacturonide, A., 1352.
- Methylglucamine, manufacture of, (P.), B., 539.
- 10-Methylglucazidone, and its salts, A., 1382.
- 4-Methyl- δ -gluconolactone, A., 1108.
- 5-Methylglucosazone, A., 1484.
- 2-Methylglucose ethylmercaptal, 6-benzoyl derivative, A., 1354.
- "4-Methylglucose," constitution of, A., 1108.
- α -Methylglucoside, fermentation of, by bacteria, A., 1169.
- 6-benzoate, silver salt, and 2:6-dibenzoyl derivative of, A., 1354.
- 2:3-di-*p*-toluenesulphonate, 4-chloro-6-iodo-, A., 848.
- 2:3:6-tri-*p*-toluenesulphonate, 4-chloro-, and 2:3:4:6-tetra-*p*-toluenesulphonate, A., 847.
- β -Methylglucoside monoacetate di- and tri-*p*-toluenesulphonates, and diacetate di-*p*-toluenesulphonate, A., 68.
- 2:3-di-*p*-toluenesulphonate, 4:6-dichloro-, 2:3:6-tri-*p*-toluenesulphonate, 4-chloro-, and 2:3:4:6-tetra-*p*-toluenesulphonate, A., 848.
- α - and β -Methylglucosides, differentiation of, with *p*-toluenesulphonyl chloride, A., 847.
- β -Methylglucosidediboric acid, A., 477.
- β -Methyl-1-*d*-glucosido-*d*-glucoside, 6:6'-di-bromo-, and 6:6'-diiodo-, pentaacetates, A., 200.
- Methylglucosidyl methyl xanthates, and their derivatives, A., 1354.
- β -Methylglutaric acid, methyl ester, A., 66.
- Methylglycosides, acetone derivatives of, A., 1108.
- Methylglyoxal, auto-condensations of, A., 67.
- effect of zinc on dismutation of, A., 1353.
- action of, on acetoacetic acid, A., 1412.
- with glutathione, A., 476.
- Methylglyoxal, decarboxylation of mesoxalic acid by, A., 1106.
- formation of, in carbohydrate metabolism, A., 778.
- from hexosediphosphoric acid by tissues, A., 402.
- from trioses at body temperature, under influence of phosphate and arsenate, A., 67.
- in summer food disorders of infants, A., 108.
- in urine in vitamin-B₁ deficiency, A., 1267.
- Methylglyoxaline, preparation of, from carbohydrates, A., 501.
- flavinate, A., 639.
- Methylglyoxaline, di- and tri-bromo-5-amino-, A., 503.
- hydroxy-, flavinate, A., 639.
- N*-1-Methyl-*D*²-glyoxalyl-*N*-methylcarbamide-*N'*-carboxyl chloride, 2:4:5:5-tetrachloro-, A., 95.
- α -Methylgluloside, A., 964.
- α -Methyl-*n*-heptadecic acid, and its derivatives, A., 864.
- δ -Methyl- $\Delta^{\alpha\alpha}$ -heptadiene, A., 1348.
- γ -Methylheptane, β -bromo-, A., 844.
- β -Methylheptane- $\delta\zeta$ -diol, A., 198.
- 2-Methyldicyclo-[1:2:2]-heptan-3-one, and its semicarbazone, A., 979.
- δ -Methyl- $\Delta\beta$ -heptene, A., 1348.
- Methylheptenone *m*-nitrobenzhydrazide, A., 743.
- cis*- and *trans*- α -Methyl- Δ^{α} -heptenonitriles, A., 611.
- α -Methylheptonitrile, chloro-derivatives, A., 610.
- Methylheptylacetic acid derivatives, relation of, to α -benzylpropionic acid derivatives, A., 1121.
- Methylhexadecylglucamine, and its derivatives, (P.), B., 620.
- Methylhexadecylsuccinic acid, and its anil, A., 65.
- δ -Methyl- $\Delta^{\alpha\gamma}$ -hexadiene, A., 611.
- δ -Methyl- $\Delta^{\beta\delta}$ -hexadiene, α -bromo-, A., 611.
- Methylhexahydro-3:4-benzfluorene, and its picrate, A., 1359.
- α -Methylhexaldehyde, α -hydroxy-, and its semicarbazone, A., 608.
- Methylhexalin, solvent power of tetralin, decalin, hexalin, and, B., 1036.
- δ -Methyl-*n*-hexane, $\alpha\beta\delta$ -tribromo-, A., 611.
- Methylcyclohexane, formation of, by catalytic hydrogenation of toluene, A., 334.
- catalytic dehydrogenation of, with nickel-aluminium catalysts, A., 1086.
- 1-Methylcyclohexane-2-acetic-1-carboxylic acid, and 2-hydroxy-, and its diethyl ester, and their derivatives, A., 859.
- 4-Methylcyclohexane-1-carboxylic-1-acetic acids, stereoisomeric, A., 489.
- 3-Methylcyclohexanecarboxylic acid, bromo-derivatives, A., 617.
- 3(4)-Methylcyclohexane-1-carboxylic acid, 4(3)-hydroxy-, A., 974.
- 4-Methylcyclohexane-1:1-diacetic acid, esters, A., 66.
- β -Methylhexane- $\gamma\epsilon$ -diol, A., 198.
- 1-Methylcyclohexane-1:2-diols, dehydration of, A., 340.
- 1-Methylcyclohexane-3:4-diols, resolution of, A., 209.
- Methylcyclohexanol, esterification of, with acetic acid, A., 208.
- dl*-1-Methylcyclohexane-1-ol-2-one, derivatives of, A., 1494.
- Methylcyclohexanone anil, A., 336.
- 2-Methylcyclohexanone *m*-nitrobenzhydrazide and 2:4-dinitrophenylhydrazide, A., 743.
- 4-Methylcyclohexanone, condensation of, with anisaldehyde, A., 345.
- α -Methyl- Δ^{α} -hexenaldehyde, and its derivatives, A., 608.
- δ -Methyl- Δ^{α} -hexene, δ -bromo-, A., 611.
- δ -Methyl- $\Delta\beta$ -hexene, $\alpha\delta$ -dibromo-, A., 611.
- Methylcyclohexenes, thermal decomposition of, A., 73.
- Methylisohexenylbenzofulvene, A., 738.
- β -(4-Methyl- Δ^1 -cyclohexenyl)-*n*-propyl alcohol, salts of, A., 756.
- Methylhexitol, synthesis of, and its hexaacetyl derivative, A., 605.
- β -Methyl-*n*-hexoamide, methylamide and carbamide, α -bromo-, (P.); B., 749.
- Methylhexoses, A., 1108.
- N*-Methyl-*C*-*n*-hexylbarbituric acid, manufacture of, (P.), B., 1165.
- Methylisohexylbenzofulvene, A., 738.
- 5-(1-Methylcyclohexyl)furan-2-carboxylic acid, and its methyl ester, A., 1128.
- Methyl hexyl ketone, *p*-nitrobenzoylhydrazide, A., 1259.
- o*-tolylsemicarbazone, A., 1259.
- Methyl-*n*-hexylmalonic acid, diethyl ester, manufacture of, (P.), B., 1165.
- Methylisohexylmalonic acid, and its diethyl ester, A., 1501.
- Methylhistamine, effect of, on gastric secretion and blood-pressure, A., 1411.
- α -Methylhomonorcarnaphoric acid, and its calcium salt and dianilide, A., 979.
- 6-Methylhomopiperonyl- β -piperonylamine, 6-hydroxy-, A., 875.
- 6-Methylhomopiperonyl- β -piperonylethylamine, A., 875.
- 6-Methylhomopiperonylic acid, A., 875.
- ω -Methylhydantoic acid, α -amino-, acetyl derivative, ammonium salt, A., 223.
- 8-Methylhydrindane, A., 968, 1495.
- derivatives, A., 1495.
- 7-Methylhydrindene, 4-bromo-, A., 853.
- Methyl-*l*-hydrindones, bromo-, A., 853.
- 8-Methyl-9- β -hydroxyethylisalloxazine, A., 1510.
- 2-Methyl-3- β -hydroxyethylindole, and its derivatives, A., 1379.
- 3-Methyl-3- β -hydroxyethylindolenine, and its derivatives, A., 1379.
- 4-Methyl-5- β -hydroxyethylthiazole, and its salts, A., 1511.
- 6-Methyl-2-hydroxymethylenecyclohexanone, A., 628.
- ζ -Methyl- γ -hydroxymethyl- Δ^{α} -hepten- β -one, A., 605.
- $\beta\beta$ -Methyliminodipropion-*o*-toluidide, A., 1386.
- 1-Methylindole-3-acetic acid, and its ethyl ester, A., 222.
- 7-Methylindole-3-aldehyde, and its anil, A., 628.
- 7-Methylindole-3-aldehyde-2-carboxylic acid, ethyl ester, A., 628.
- 7-Methylindole-2-carboxylic acid, and its derivatives, A., 628.
- 5-Methylindolyl-3-acetic acid, and its methyl ester and its picrate, A., 1352.
- β -(2-Methyl-3-indolyl)ethyl dimethylamine, A., 1256.
- β -(2-Methyl-3-indolyl)ethyl methylamine, A., 1256.
- Methylionones, constitution of, A., 1240.
- Methyl ketones, detection of, A., 877.
- 5-Methyl-1-keto-1:2:3:4-tetrahydronaphthalene derivatives, A., 1236.
- 5-Methyl-1-keto-1:2:3:4-tetrahydronaphthalene-2-carboxylic acid, ethyl ester, and its pyrazolone, A., 1236.
- 3-Methyl-lactoflavin, A., 1382.

- Methyl-laurylglucamine, and its derivatives, (P.), B., 620.
- Methyl-*d*-lyxonic acid, α -hydroxy-, and its phenylhydrazide, A., 197.
- Methylmaleinimidecyclopropanecarboxylic acid, A., 871.
- Methylmaltoside *heptaacetate*, preparation of, A., 609.
- 7-Methyl-9-*d*-1'-mannitylisoalloxazine, A., 631.
- and its penta-acetate, A., 760.
- α -Methylmannoside, isopropylidene derivatives, A., 732.
- 2:3-diacetate, A., 847.
- Methylmannosides, tetraacetates, formation of penta-acetates of mannoses from, A., 68.
- α -Methyl- α -mannuronide, potassium derivative and hydrate, A., 732.
- Methyl- β -melibioside *heptaacetate*, A., 848.
- 1-Methylmethenyltetrazole, 4-amino-, A., 1509.
- 2-Methyl-5-methoxymethyl-4:5-dihydrofuran, A., 352.
- 1-*N*-Methyl-6(7)- α (β)-methoxy- δ -methyl- Δ^7 -pentenyl-*lin*-naphthindazole-4:9-quinone, 5:8-*dihydroxy*-, A., 1254.
- 5-Methyl-5- β -methylallyl-2-thiobarbituric acid, A., 1507.
- 2- and 3-Methyl- α -methylaltrosides, A., 1325.
- 2-Methyl-3- β -methylaminoindole, and its picrate, A., 1379.
- N*-Methyl-*C*-methyl-*C*-bromoallylbarbituric acid, manufacture of, (P.), B., 1165.
- 6-Methyl(*exo*)-2:5-*endomethylenehexahydrobenzoic acid*, 3-hydroxy-, lactone, A., 341.
- trans*-6-Methyl(*exo*)-2:5-*endomethylene- Δ^3 -tetrahydrobenzoic acid*, A., 341.
- 4-Methyl-3-methylenethiacyclopentane 1:1-dioxide, 4-hydroxy-, acetyl derivative, A., 498.
- 4-Methyl-3-methylenethia- Δ^4 -cyclopentene 1:1-dioxide, and its derivatives, A., 498.
- Methyl α -methyl- β -ethyl-*n*-amyl ketone semicarbazone, A., 847.
- Methyl- Δ^4 - ξ -methyl- β -heptenylamine, and its derivatives and intermediate Schiff's base, manufacture of, (P.), B., 749.
- ζ -Methylmorphimethine, and its salts, A., 99.
- Methylmorphimethines, metho-sulphates, A., 366.
- β -Methylmuconic acid, A., 731.
- methyl hydroxamate, A., 484.
- "7-Methylmyrtenyl alcohol," and its hydrogen phthalate, A., 1376.
- 2-Methylnaphthacene, A., 335.
- 1-Methylnaphthalene derivatives, A., 1116.
- 1-Methylnaphthalene, 2-nitrosoamino-, acetyl derivative, A., 1508.
- 2-Methylnaphthalene derivatives, A., 615.
- 2-Methylnaphthalene, 1-amino-, 8-hydroxy-, A., 615.
- 8-chloro-1-amino-, -1-nitro-, and -1-nitroso-, A., 991.
- 8-chloro-1-amino-, and -1-nitro-, and 1-nitrosoamino-, acetyl derivative, A., 1508.
- 1:3:4-trihydroxy-, triacetyl derivative, A., 495.
- 2-Methyl-5:6-(1:2-naphtha)- γ -pyran, A., 1497.
- 2-Methyl- α -naphthaquinone, reactions with, A., 494.
- dimeride of, and its derivatives, A., 495.
- 2-Methyl- α -naphthaquinone, 3-hydroxy-, and its derivatives, A., 495.
- 2-Methyl-1:4-naphthaquinone, 3:5:8-trihydroxy-, A., 623.
- 7-Methyl-5:8-naphthaquinone, 1:4-*dihydroxy*-, A., 1243.
- 1-Methyl- α - and - β -naphththiazoles, etho-*p*-toluenesulphonates of, A., 631.
- 1-Methyl-*lin*-naphththiazole, and 1-hydroxy-, A., 761.
- Methyl- $\alpha\beta$ -naphtha-1:2:3-triazoles, and their picrates, A., 359.
- Methylnaphthazarin, and its diacetate and diboroacetate, A., 623.
- 2-Methyl-*lin*-naphththiazole, A., 761.
- 1-Methyl-*lin*-naphththiazole-8:9-quinone, A., 761.
- 2-Methyl-*lin*-naphththiazole-8:9-quinone, A., 762.
- 1-Methylnaphthoic acids, 6-hydroxy-, A., 1116.
- 1-Methyl- β -naphthol, and its picrate, A., 744, 970.
- 8-Methyl- β -naphthol, synthesis of, A., 618.
- 2-Methylnaphthoxazoles, A., 762.
- 3-Methyl- β -naphthoxindole, 3-hydroxy-3-nitro-, A., 501.
- Methyl γ -2-naphthoxypropyl ketone, and its semicarbazone, A., 1242.
- β -Methylnaphthoylephenanthrene, A., 980.
- 2-2'-Methyl-1'-naphthoylephenanthrene, A., 980.
- β -(8-Methyl-2-naphthoyle)propionic acid, and its methyl ester, A., 205.
- γ -(8-Methyl-2-naphthyl)butyric acid, methyl ester, A., 205.
- 1-Methyl-3-naphthylidimethylcarbinol, and its picrate, A., 1234.
- α -(4-Methyl-1-naphthyl)ethyl alcohol, and its picrate, A., 741.
- α -(4-Methyl-1-naphthyl)ethyl bromide, and its picrate, A., 471.
- 2-Methyl-1-(β -1'-naphthylethyl)cyclohexanol 3:5-dinitrobenzoate, A., 969.
- 2-Methyl-1-(β -1'-naphthylethyl)- Δ^4 -cyclohexene, A., 969.
- Methyl-2-naphthylmethylmalonic acid, A., 1359.
- Py-N*-Methylnitroarmaline, and its hydriodide, A., 765.
- Py-N*-Methylnitroarmine hydrochloride, A., 765.
- θ -Methyl- $\Delta\beta\eta$ -nonadien- δ -one, and its semicarbazone, A., 609.
- γ -Methylnonan- γ -ol, A., 957.
- 7-Methyl-[0:3:4-*dicyclo*]nonan-2-one-3:4-dicarboxylic acid, ethyl ester and semicarbazone, A., 756.
- γ -Methyl- $\Delta\beta$ -nonene, A., 957.
- θ -Methyl- $\Delta\beta$ -nonen- δ -one, and its semicarbazone, A., 609.
- β -Methylnorcampholidylpropionic acid, and its methyl ester, A., 625.
- 6-Methylnorcamphor. See 2-Methyldicyclo-[1:2:2]-heptan-3-one.
- Methylnorcarotene, antiscorbutic inactivity of, A., 416.
- Methyloctahydrochrysene, and its picrate, A., 969.
- 10-Methyl-3:4:10:11:5':6':7':8'-octahydro-2':1'-naphtha-1:2-fluorene, and its complex with 2:7-dinitroanthraquinone, A., 75.
- trans*-3-Methyl- Δ^2 -octal-1-one, A., 1240.
- trans*-3-Methyl- Δ^2 -octal-1-one-4-carboxylic acid, ethyl ester, A., 1240.
- 2-Methyldicyclo-[2:2:2]-octane, and its dehydrogenation, A., 1112.
- β -Methyl- $\Delta\beta$ -octene, A., 957, 1348.
- 2-Methyldicyclo-[2:2:2]-octene, A., 1112.
- η -Methyl- Δ^4 -octen- γ -one- α -ol, A., 605.
- β -Methyl-*n*-octyl bromide, A., 957.
- Methyloctylacetic acid, derivatives, relation of, to α -benzylpropionic acid derivatives, A., 1121.
- Methyl-*n*-octylvinylethynylcarbinol, manufacture of, (P.), B., 347.
- 3-Methyloximino-2-phenylindolenine, A., 1250.
- Methyl-*n*-pentadecylmalonic acid, and its diethyl ester, A., 864.
- cis*- and *trans*-2-Methylcyclopentane-1-carboxylic-2-acetic acid, and their derivatives, A., 1495.
- 3-Methylcyclopentane-1:1-diacetic acid, esters, A., 66.
- trans*-1-Methylcyclopentane-2:3-diol, A., 852.
- 1-Methylcyclopentane-2:3-diols, and their diphenylurethane, A., 851.
- β -Methylpentane- $\delta\delta\delta$ -tetracarboxylic acid, tetraethyl ester, A., 1246.
- β -Methylpentane- $\delta\delta$ -tricarboxylic acid, and its triethyl ester, A., 1246.
- 1-Methylcyclopentan-2-ol, 3-chloro-derivatives, A., 982.
- 1-Methylcyclopentanols, 2-chloro-, isomeric, A., 208.
- 2-Methylcyclopentanol derivatives, A., 982.
- β -Methylpentan- δ -one, β -hydroxy-. See Diacetone alcohol.
- 2-Methylcyclopentanone, 5-chloro-derivatives, A., 982.
- 1-Methylcyclopentan-2-one-3-ol, and its phenylhydrazone, A., 982.
- 1-Methyl- Δ^2 - and - Δ^3 -cyclopentenenes, and their derivatives, A., 851, 852.
- 1-Methyl- Δ^2 -cyclopentene-1-carboxylic acid, and its ethyl ester, A., 1496.
- α -Methylpentenoic acids, tautomerism and reactions of, A., 617.
- 2-Methyl- Δ^4 -cyclopentenone, and its semicarbazone, A., 982.
- 3-Methylcyclopentenophenanthrene, formation of, from sterols and genins, A., 481.
- 3-Methyl-1:2-cyclopentenophenanthrene, preparation and identification of, A., 968.
- identity of, with hydrocarbon $C_{18}H_{16}$, A., 335.
- 9-Methyl-1:2-cyclopentenophenanthrene, and its derivatives, A., 742.
- 3-Methyl-4:5-cyclopentenopyrrole, and its picrate, A., 870.
- 3-Methyl-4:5-cyclopentenopyrrole-2-carboxylic acid, and its ethyl ester, A., 870.
- 7- δ -Methyl- Δ^7 -pentenylanthraquinone, A., 88.
- 1-Methyl- Δ^2 -cyclopentenylmethyl alcohol, and its *p*-nitrobenzoate and derivatives, A., 1496.
- 7- δ -Methyl- Δ^7 -pentenyl-5:8:9:10-tetrahydroanthraquinone, A., 88.
- Methylphaeophorbide- α , derivatives of, A., 871.
- oxime, A., 362.
- 9-Methylphenanthrene, 9-chloro-, and its picrate, A., 1359.
- 1-Methylphenanthrene-3-carboxylic acid, methyl ester, A., 1234.
- 1-Methyl-3-phenanthryldimethylcarbinol, A., 1234.
- Methylphenarsazine dihydroxide, chemistry and biological activity of, and its derivatives, A., 246.
- 1-Methylphenazine, A., 224.
- synthesis of, A., 630.
- Methylphenetides, A., 1488.
- Methylphenetylcarbamides, A., 1488.
- p*-Methylphenol- β -*d*-glucoside, *p*-cyano-, and its tetra-acetyl derivative, A., 964.
- 2-Methylphenoxarsine, 10-chloro-, A., 1257.
- 6-Methylphenoxazine, 3-nitro-, A., 1491.
- Methyl γ -phenoxypropyl ketone, and its derivatives, A., 1242.

- 4-Methyl-1:1'-phenylazoimino- β -hydroxy-naphthoic acid 2-oxide, and its anilide, B., 988.
- β -Methyl- γ -phenylbutyric acid, α -amino-, A., 746.
- 4'-Methyl-2-phenyl-1:4-dihydroquinoline-4-carboxylic acid, and its silver salt, A., 356.
- 9- β -Methylphenylfluorene, 9-chloro-, A., 1358.
- 4(5)-5'-Methylphenylglyoxaline, 4(5)-2'-hydroxy-, and its copper salt, A., 1507.
- N-Methyl- α -phenylsaminone, derivatives of, A., 98.
- Methylphthalic acids, 4:6-dibromohydroxy-, and their anhydrides, A., 748.
- α -Methylphthalide-6-acetic acid, 3:4:5-trihydroxy- α -trichloro-, and its acetyl derivative, A., 620.
- Methylphthalide-2-carboxylic acids, 4:6-dibromohydroxy-, A., 748.
- 1-Methylpiperazine, and its salts, A., 629.
- N-Methylpiperidine, action of ethylene dibromide on, A., 1250.
- 1-Methylpiperidine-3-carboxylic acid, 4-hydroxy-, methyl ester, and its salts, A., 629.
- α -Methylpropane. See Butane.
- β -Methylpropane. See isoButane.
- 1-Methylcyclopropane, 1-cyano-, synthesis of, from α -methylacrylonitrile and diazomethane, A., 210.
- 1-Methylcyclopropane-1-carboxylamide, A., 210.
- 1-Methyl-3-isopropenylphenanthrene, A., 1234.
- 9- β -Methyl- n -propylisalloxazine, 9- β -hydroxy-, A., 1510.
- β -Methyl- n -propylaniline, o -nitro- β -hydroxy-, A., 1510.
- 5-Methyl-2-isopropylbenzaldehyde, and its diethylacetal, A., 1240.
- 1-3'-Methyl-6'-isopropylbenzoylphenanthraquinone, and its phenazine derivative, A., 75.
- Methyl- n -propylcarbamide, A., 1155.
- Methylisopropylcarbinol, polymerisation of olefines formed by action of sulphuric acid on, A., 192.
- 5-Methyl-2-isopropylcinnamic acid, A., 1240.
- 4-Methyl-3- n -propylcoumarin, 6-chloro-7-hydroxy-, and its acetyl derivative, A., 1504.
- β -Methyl-4- α -propylene, $\alpha\alpha$ -dibromo-, A., 1105.
- Methylisopropylfluorene, A., 738.
- 5-Methyl-2-isopropylfuran, and its preparation and condensation with maleic anhydride, A., 1245.
- $\beta\beta$ -Methylpropylglutaric acid, methyl ester, A., 65.
- Methylisopropylhexahydrofluorene, A., 738.
- 2-Methyl-5-isopropyl-4 2 -cyclohexenone. See Hexetone.
- 3-Methyl-5-isopropyl-4 2 -cyclohexenylamine, and its oxalate, A., 1498.
- 3-Methyl-5-isopropylcyclohexyl- β -hydroxyethylamine, A., 1498.
- 7-Methyl-4-isopropylhydrindene-1:1'-spiro(4':5'-benz)hydrindene, and its picrate, A., 75.
- 7-Methyl-4-isopropylhydrindene-1:7'-spiro-7':8'-dihydrophenalene, A., 75.
- 7-Methyl-4-isopropyl-1-hydrindone, A., 1240.
- and its phenylhydrazones, A., 75.
- 5-Methyl-1:2-isopropylidene-3:4-anhydro- d -psicose, A., 735.
- α -Methyl-3:4-isopropylidenegalactopyranoside, A., 1108.
- β -Methyl-2:3-isopropylidenemannopyranoside, A., 1108.
- 4-Methyl-1:2-isopropylidene- d -sorbitose, and its diacetate, A., 735.
- 1-Methylisopropylidenethreonic acid, methyl ester, and its derivatives, A., 732.
- d - β -Methyl- $\gamma\delta$ -isopropylidenexyluronic acid, and its methyl ester, A., 1106.
- Methyl- n -propylindoles, and their picrates, A., 1378.
- Methyl n -propyl ketone, electrolytic reduction of, to n -pentane, A., 310.
- N-nitroguanylimine, A., 769.
- analysis of, B., 663.
- determination of, A., 102.
- 5-Methyl-8-isopropyl-2'-1'-naphtha-1:2-fluorene, and its complex with 2:7-dinitroanthraquinone, A., 75.
- 5-Methyl-8-isopropyl-2'-1'-naphtha-1:2-fluorenone, A., 75.
- 1-Methyl-3-isopropyl-naphthalene, and its picrate and styphnate, A., 1234.
- 1-Methyl-3-isopropylphenanthrene, and its picrate and styphnate, A., 1234.
- d - α -Methyl- δ -isopropylmelic acid, derivatives of, A., 755.
- 1-Methyl-3-isopropyl-1:2:3:4-tetrahydronaphthalene, A., 1234.
- 1-Methyl-3-isopropyl-1:2:3:4-tetrahydrophenanthrene, and its picrate and styphnate, A., 1234.
- 3-Methyl-4-isopropyl-2:2:6-triallylcyclohexanone, A., 621.
- 1-Methylpyrazolecarboxylic acids, methyl esters, A., 1380.
- 2-Methylpyridine. See α -Picoline.
- 9-Methyl-3:4-pyridino-7:8:9-triazole, and its salts, A., 993.
- Methylpyridone, action of carbon disulphide on, A., 995.
- N-Methyl-4-pyridone, 3-nitro-, A., 97.
- 4-Methyl-2-pyridone-3-carboxylamide, 6-hydroxy-, A., 1250.
- N-Methylpyridodithiodiazolone, A., 995.
- Methylpyrroetio-porphyrin, hydroxy-, and its derivatives, A., 633.
- 1-Methylpyrrolidine, 2:5-dihydroxy-, diacetyl derivative and its picrate, A., 874.
- 2-Methylquinoline di - and tri -chloroiodides and iodocyanide, A., 356.
- 2-Methylquinoline, 4-hydroxy-, and its derivatives, A., 1506.
- reactions of, A., 758.
- 3-Methylquinoline dicyanides, isomeric, A., 92.
- 8-Methylquinoline derivatives, A., 1506.
- ω -substituted, synthesis of, A., 1251.
- 8-Methylquinoline, 3-chloro-, A., 628.
- 4-cyano-, A., 93.
- 8-Methylquinoline-4-carboxylic acid, A., 93.
- 2-Methyl-4-quinolylazide, and its picrate, A., 989.
- 2-Methyl-4-quinolylhydrazine, and its salts and derivatives, A., 989.
- 1-Methyl- β -1- d -rhamnosido-6- d -glucose hexaacetate, A., 1110.
- 7-Methyl-9- d -1'-ribitylisoalloxazine, and its tetra-acetate, A., 1510.
- biological action of, A., 1019.
- Methylribonic acids, α -hydroxy-, A., 197.
- Methylsalicylic acid, phthaloyl ester, production of, (P.), B., 940.
- N-Methylsamaridine, and its salts, A., 98.
- N-Methylsamaridone methiodide, A., 98.
- Methylsamiol, and its derivatives, A., 98.
- Methylsaminone, and its derivatives, A., 98.
- 1-Methylsantene, and its derivatives, A., 866.
- Methylsantene compounds, derived from fenchyl alcohol, A., 755.
- sec.-4-Methylsantenol, and its acetate and phenylurethane, A., 866.
- tert.-2-Methylsantenol, A., 865.
- 4-Methylsantenone, and its derivatives, A., 866.
- 4-Methylsantenonequinone, and its derivatives, A., 866.
- tert.-1-Methylsantenyl alcohol, phenylurethane from, A., 866.
- Methylscillarenic acid, A., 330.
- Methylselenonic acid, and its aniline salt, A., 1231.
- Methylseleno-4 2 -cyclopentene 1:1-dioxide, and 3-chloro-, A., 100.
- γ -Methyl- d -sorbitol, and its diformal, A., 1109.
- 7-Methyl-9- d -1'-sorbitylisoalloxazine, and its penta-acetate, A., 760.
- 7-Methyl-9- d -1'-sorbitylisoalloxazine, A., 359.
- 4-Methyl- d -sorbitose, and its phenylsazone, A., 735.
- 4-Methyl- d -sorbitose, A., 1109.
- 3-Methylstilbene, 4:6:2'-tri-amino-, A., 1505.
- α -Methylstyryl β -propyl ketone, A., 83.
- Methylsugars. See Sugars, methylated.
- α -Methylsulphoacetic acid, methyl ester, A., 733.
- Methyl- α -sulphonopropylsulphone, and its chloride, A., 1350.
- Methyl- β -sulphono- n -propylsulphone, and its derivatives, A., 1350.
- α -Methyl- β - n -tetradecylsuccinic acid, A., 65.
- 3-Methyl-1:4:4':9'-tetrahydroanthraquinone, 2-chloro-, (P.), B., 622.
- 10-Methyl-3:4:10:11-tetrahydro-1:2-benzfluorene, A., 75.
- Methyltetrahydro-1:2:5:6-dibenzfluorene, and its picrate, A., 1359.
- Methyl-4:5:6:7-tetrahydroindoles, A., 870.
- 3-Methyl-4:5:6:7-tetrahydroindole-2-aldehyde, A., 870.
- 2-Methyl-4:5:6:7-tetrahydroindole-3-carboxylic acid, A., 870.
- 3-Methyl-4:5:6:7-tetrahydroindole-2-carboxylic acid, $mono$ - and di -bromo- and -chloro-, and bromohydroxy-, ethyl esters, A., 870.
- 3-Methyl-4:5:6:7-tetrahydroindole-5-carboxylic acid, and its ethyl ester, A., 870.
- 3-Methyl-4:5:6:7-tetrahydroindole-3':5'-dimethyl-4'-ethylpyrrolenine-2:2'-methene, and its salts, A., 870.
- 2-Methyl-1:2:3:4-tetrahydronaphthacene, A., 335.
- 1-Methyltetrahydronaphthalene, A., 481.
- 4-Methyl-1:2:3:4-tetrahydronaphthalene-1-carboxylic acid, synthesis of, A., 81.
- 2-Methyl-5:6:7:8-tetrahydronaphtha-1:4-quinol, and its diacetate, A., 863.
- 2-Methyl-5:6:7:8-tetrahydronaphtha-1:4-quinone, A., 863.
- 1-Methyl-1:2:3:4-tetrahydro-3-naphthyldimethylcarbinol, and its derivatives, A., 1234.
- 1-Methyl-1:2:3:4-tetrahydro-1:2-cyclopentenophenanthrene, 7-hydroxy-, and its benzoate, A., 753.
- 1-Methyl-1:2:3:4-tetrahydrophenanthrene-2-carboxylic acid, A., 975.
- 1-Methyl-1:2:3:4-tetrahydrophenanthrene-3-carboxylic acid, methyl ester, A., 1234.
- 1-Methyl-1:2:3:4-tetrahydrophenanthryldimethylcarbinol, and its derivatives, A., 1234.

- 1-Methyl-1:2:3:4-tetrahydrophenazine, A., 224.
- 2-Methyl-5:6:7:8-tetrahydrophenazine, A., 992.
- 2-Methyl-5:6:7:8-tetrahydroquinoline, 3-cyano-, and its picrate, A., 222.
- Methyl-5:6:7:8-tetrahydroisoquinolines, 3-hydroxy-, A., 628.
- 2-Methyl-5:6:7:8-tetrahydroquinoline-3-carboxylic acid, 3-cyano-, and its picrate, A., 222.
- 3-Methyl-2:2:6:6-tetra-*n*-propylcyclohexanol derivatives, A., 621.
- 4-Methyl-2:2:6:6-tetra-*n*-propyl-*l*-methylene-cyclohexane, A., 621.
- l*- γ -Methyltetronic acid from micro-organisms, A., 898.
- γ -Methyltetronic acids, and their derivatives, A., 327.
- N*-Methyltheobromuric acid, methyl ester, A., 96.
- 3-Methylthiacyclopentane, 3:4-dichloro-, and its dioxide and compound with mercuric chloride, A., 325.
- 4-Methylthia-4'-cyclopenten-3-one 1:1-dioxide, and its oxime, A., 498.
- 4-Methylthiazole ethiodide and platinichloride, A., 1511.
- 4-Methylthiazole-5-carboxylic acid, preparation of, A., 1135.
- and its ethyl ester, A., 1511.
- p*-Methylthiocarbamide. See *s*-Phenyl-*p*-tolylthiocarbamide.
- Methylthiocarbonic acid, benzoyl- α -methylglucosidyl ester, A., 1354.
- Methylthioformaldin hydrochloride, A., 1385.
- 2-Methylthiol-1:6-dihdropurine, 8-bromo-, A., 503.
- 3-Methylthiol-2-methylfuran-5-carboxylic acid, A., 497.
- 2-Methylthiol-3-phenyl-1-methylindole, A., 1379.
- Methylthiolpropanesulphonic acids, sodium salts, A., 1350.
- β -Methylthiolisopropyl alcohol, A., 1350.
- 2-Methylthiol-3-*m*-tolyl-1-methylindole, and its picrate, A., 1379.
- 3-Methyl-4:5-thionaphthenopyrazole, and its dioxide, A., 764.
- 3-Methylthiophens, *mono*- and *di*-bromo-, and their derivatives, tribromo-3-bromo-, 2-bromo-5-iodo-, and 2-iodo-, A., 354.
- Methylthiophencarboxylic acids, and bromo-, A., 354.
- 4-Methylthiophen-2-carboxylic acid, 4-amino-, and its derivatives, and 4-hydroxy-, A., 1248.
- l*-Methylthreonamide, A., 732.
- l*-Methylthreononic acid, brucine and quinine salts, A., 732.
- l*-Methylthreonolactone, A., 732.
- N*-Methyl-*p*-toluenesulphon-*o*-aniside, A., 1491.
- N*-Methyl-*p*-toluidino-4'-cyclohexene, A., 742.
- α -*N*-Methyl-*p*-toluidino-*p*-methylstyrene, A., 742.
- α -*N*-Methyl-*p*-toluidinostilbene, A., 742.
- α -*N*-Methyl-*p*-toluidinostyrene, A., 742.
- β -*N*-Methyltoluidinostyrene, A., 742.
- Methyltolylcarbamides, A., 1488.
- β -Methyltricarballic acid, trimethyl ester, condensation of, with oxalic esters, A., 861.
- 4-Methyl-6-*n*-tridecylpyridazinone, A., 864.
- 3-Methyltriethylspirodihydantoin, A., 225.
- 3-Methyl-2:2:6-tri-*n*-propyl-6-isopropylcyclohexanone, and its derivatives, A., 621.
- N*-Methyltryptamine. See 3- β -Indolylethylamine.
- Methyltryptophans, metabolism of. See under Metabolism.
- O*-Methyltubocurarine chloride, A., 1138.
- iodide, A., 1514.
- O*-Methyltubocurarinemethines, methiodides of, A., 1514.
- β -Methylumbelliferone, use of, as fluorescence indicator, A., 316.
- 1-Methyl- ψ -uric acid, 5-chloro-, A., 361.
- Methyluric acids, derivatives of, and chloro-, A., 361.
- 9-Methyluric acid glycol, reaction of, with acetic anhydride, A., 225.
- β -Methylvaleraldehyde semicarbazone, A., 963.
- Methylvinylacetylene, manufacture of, (P.), B., 347.
- Methylvinylcarbinyl bromide. See 4-*n*-Butene, γ -bromo-.
- Methylvinylethylcarbinol, manufacture of, (P.), B., 347.
- Methyl vinyl ketone, manufacture of, (P.), B., 620.
- Methylxanthic acid, sodium salt, stability of, B., 760.
- 7-Methyl-9-*d*-1'-xyloisalloxazine, A., 359.
- Methyl-*d*-xylonic acid, α -hydroxy-, and its derivatives, A., 197.
- l*- β -Methylxylonic acid, and its cadmium complex salt, A., 1106.
- Metol, production of, (P.), B., 1085.
- Metrazole, effect of, on central nervous system, A., 1158.
- Mezcaline, determination of, in tissues, A., 1018.
- Mica, effect of ageing on conductivity of, B., 507.
- use of, in paints, B., 814.
- coating of paper with, (P.), B., 625.
- manufacture of composite articles of, (P.), B., 111.
- manufacture of vitreous compositions from, (P.), B., 149.
- muscovite, orientation of lead bromide and chloride by, A., 570.
- Mice, white, calcium absorption in, A., 524.
- Michael reaction, A., 215, 977, 981.
- abnormal, theory of, A., 977.
- Microbin, detection and determination of, in foods, B., 747.
- Microcataphoresis. See under Cataphoresis.
- Microchemical analysis. See under Analysis.
- Microchemistry, training in, A., 1099.
- improved laboratory technique for, A., 1098.
- catalytic and induced reactions in, A., 1084.
- fluorescence analysis in, A., 315.
- applied, A., 1091.
- Microhydrogenation. See under Hydrogenation.
- Micro-organisms, distribution of, in the atmosphere, A., 535.
- growth of, influence of properties of agar on, A., 1170.
- effect of calcium on, A., 535.
- growth-factors for, A., 663.
- solubility of, A., 1289.
- utilisation of growth factors by, A., 1166.
- culture of, on cellophane membranes, A., 1031.
- development of, in unfavourable media, A., 662.
- use of soil as medium for distribution of, B., 282.
- preservation of stock cultures of, A., 257.
- action of anemonin on, A., 1281.
- Micro-organisms, effects of ions on, A., 126.
- action of sodium ricinolate on, A., 665.
- auxogenic action of vitamin-*B*₁ on, A., 1027.
- interconversion of aromatic and hydroaromatic compounds by, A., 1540.
- utilisation of carbohydrates and polyhydric alcohols by, A., 1170.
- lactoflavin in, A., 663.
- formation of organo-metalloidal compounds by, A., 738.
- decomposition of pentosans and pentoses by, A., 898.
- synthesis of polysaccharides by, A., 477.
- biochemistry of, A., 327, 662, 786, 898, 1028.
- physiology of, A., 405.
- oxidising thiosulphate, cultivation of, A., 126.
- putrefactive, action of carbon dioxide on, A., 256.
- soil, relation of, to higher plants, A., 406.
- determination in, of lipins, A., 899.
- determination of nitrogen in cultures of, A., 899.
- Microphones, granules for, (P.), B., 639.
- Microphotography, ultra-violet, of radiation effects on living organisms, A., 124.
- Microphotometers. See Photometers, micro-.
- Microphylllic acid, A., 490.
- Microphyllinic acid, methyl ester, A., 491.
- Microscopes, determination of orientation of crystals under, A., 1340.
- counting-field finder for, A., 1217.
- combined with photo-electric cell, A., 422.
- electron, A., 161, 189, 723, 1341.
- polarisation, testing of metals with, B., 501, 1146.
- ultra-violet, for study of opaque objects, A., 188.
- Microscopy, training in, A., 1099.
- permanent aqueous mounts for, A., 1098.
- at low temperatures, A., 1217.
- apparatus for, A., 1097.
- of food products, B., 169, 521.
- industrial, B., 129.
- Mildew, action of copper sprays against, B., 473.
- on textiles, B., 540.
- of wool, B., 1135.
- Miliacin, B., 463.
- and its derivatives, A., 753.
- Milk, production of, influence of soya-bean cake on, A., 884.
- energetic efficiency of, A., 1528.
- containing vitamin-*D*, A., 261.
- effect of fat feeding on, A., 241.
- quantity of, in relation to fat content, A., 106, 884.
- effect of feeding irradiated dried yeast on yield and composition of, A., 106.
- calculation of composition of, from fat test, A., 379.
- effect of homogenisation on properties of, B., 825.
- treatment of, (P.), B., 610.
- for transportation, (P.), B., 380.
- deodorisation of, (P.), B., 290.
- drying apparatus for, (P.), B., 929.
- filtering of, (P.), B., 700.
- physical effects of freezing of, B., 873.
- coagulation of, B., 873.
- effect of heating on time of, in the stomach, B., 873.
- effect of halogen salts on, by trypsin, A., 785.
- hysteresis in, A., 1267.

- Milk**, determination of curd tension of, using hydrochloric acid-pepsin coagulant, B., 873.
 physical changes in rennet coagulation of, B., 1019.
 pasteurisation of, B., 77, 698, 873; (P.), B., 44.
 for cheese manufacture, B., 77.
 low-temperature, control of, B., 77.
 control of heat-resistant bacteria in, B., 1066.
 detection of, by amylase test, B., 781.
 detection of flash-pasteurisation of, with dithizone, B., 43.
 detection of short heating of, B., 426.
 and milk products, effect of materials absorbed on fat globules in flavour of, B., 570.
 oxidised flavour in, B., 873.
 taint in, during feeding of molassed beet pulp, B., 1019.
 sterilisation of, (P.), B., 958.
 with ultra-violet light, (P.), B., 827.
 irradiation of, with ultra-violet rays, (P.), B., 700.
 effect of temperature on conductivity of, A., 234.
 steam pressure in heating of, B., 873.
 determination of f.p. of, apparatus for, B., 377.
 modified Hortvet apparatus for, B., 1115.
 Hortvet and Monier-Williams apparatus for, B., 1115.
 Winter's apparatus for, B., 285.
 of abnormal f.p., B., 171, 604.
 cryoscopy of, B., 77.
 effect of spontaneous souring on p_H of, B., 746.
 surface tension of, B., 42.
 passage of diffusible substances into, A., 884.
 ammonium salts and cleanliness of, B., 874.
 seasonal variation of butter fat content of, B., 872.
 co-reductase and reductase of, A., 1524.
 Schardinger's enzyme in, A., 783.
 influence of climate on fat content of, B., 570.
 relation of fat content of, to passage of curd from the stomach, A., 1152.
 foam-producing substances in, B., 250.
 iodine in, and effect thereon of feeding iodised dry milk, A., 647.
 seasonal variations in lipase of, A., 1147.
 metals in, B., 825.
 seasonal variation of non-fatty solids of, B., 250.
 seasonal variation in serum of, B., 872.
 low stability of vitamin-C in, A., 1005.
 production of casein from, (P.), B., 380.
 conversion of, into soft curd milk, B., 43.
 clean supplies of, B., 921.
 detection of contamination of, by methylene-blue reduction, B., 874.
 preservation of, (P.), B., 522, 972.
 by freezing, (P.), B., 876.
 preservation of composite samples of cream and, B., 1066.
 storage of, (P.), B., 204.
 interior protection of wooden barrels for, B., 746.
 proteolytic activity of separator slime from, B., 873.
 physiology of secretion of, A., 1147.
 effect of salts on cell permeability in secretion of, A., 106.
 increase of secretion of, by antithyroid-in, A., 647.
- Milk**, influence of thyroxine on secretion of, A., 1147.
 bacteriology of, electro-pasteurised by Aten method, B., 426.
 media for bacteriological analysis of, B., 874.
 bacteria and keeping quality of, B., 872.
 microscopy of, B., 521.
 action of aldehyde-dehydrogenase of, on cytochrome-C from yeast, A., 783.
 bacilli of the *coli-aërogenes* group in, A., 407.
 isolation of streptococci from, A., 663.
 biological food value of, A., 647; B., 475.
 nutritive value of, and its products, B., 825.
 influence of cow's food on, A., 1398.
 digestibility of, *in vitro*, A., 1523.
 influence of physical properties on digestion of, A., 379, 1398.
 increasing vitamin content of, (P.), B., 204.
 vitamin-B supplementation of, B., 171.
 influence of amyl ether in Gerber test on, B., 652.
 Hill curd test on, B., 475.
 testing of, by Hortvet f.p. process, B., 475, 570.
 Minnesota Babcock test reagent for, B., 1066.
 effect of high-temperature pasteurisation on peroxidase reaction of, B., 571.
 influence of bacteria on reductase test for, A., 884, 1524.
 reductase and fermentation tests and bacterial counts on, B., 42.
 use of methylene-blue thiocyanate in reduction test for, A., 1524.
 resazurin reductase test for, A., 512.
 testing of, from the cow, (P.), B., 700.
 analysis of, conductivity apparatus for, B., 825.
 micro-analysis of, B., 825.
 field tests for chlorine in, for detection of mastitis, B., 77.
 detection in, of *Escherichia-Aërobacter* group, A., 1420.
 of formaldehyde by methylene-blue test, B., 874.
 of lactic acid, B., 475.
 of boiled milk, B., 42.
 of nitrates, B., 1019.
 of water, B., 873.
 by water content of plasma and f.p. data, B., 42.
 titratable acidity of, B., 873.
 effect of irradiation on, B., 873.
 determination in, of alkaline preservatives, B., 171.
 of casein, B., 377.
 of citric acid, B., 204.
 of copper, B., 746.
 microchemically, A., 512.
 of dirt, B., 874.
 of fat, B., 873, 1161.
 of lactose, A., 1147.
 of magnesium, colorimetrically, A., 1399.
 of phosphates, volumetrically, B., 873.
 of phosphorus and lipins, A., 512.
 of potassium, B., 204.
 of proteins, volumetrically, B., 171.
- Milk**, acidophilus, manufacture of, (P.), B., 1067.
 anthropoid ape's, composition of, A., 379.
 Belgian, simplified molecular constants of, B., 604, 781.
 boiled, citric acid in, B., 746.
 brown, B., 604.
 Brussels, molecular constant of, B., 571.
- Milk**, condensed, influence of metals on flavour of products from, B., 1066.
 sweetened, preservation of, (P.), B., 380.
 cow's, effect of pasture and stall feeding on, B., 699.
 influence of fodder-fat on fat in, A., 773.
 relation between fat content of, and absolute fat production, A., 379.
 effect of fish oils on, A., 773.
 passage of animal or vegetable material into, A., 379.
 vitamin-B₂ in, A., 545.
 formation of vitamin-C in, A., 416.
 utilisation of, A., 884.
 buffer value of, B., 42.
 standards for solids-not-fat in, B., 1019.
 Guernsey or shorthorn, relation of chlorine and sodium in, A., 647.
 Jersey, effect of frequent milking on, A., 647.
 influence of season and lactation on butterfat content of, B., 869.
 shorthorn, B., 872.
 determination in, of lactose, A., 773.
 cow's and human, ammonia content of, A., 1524.
 Umikoff reaction with, A., 1267.
 crop-, of pigeons, composition of, and importance for growth of squabs, A., 379.
 dried, composition and nutritive value of, B., 42.
 replacement by carbohydrates of fats in diet of, A., 778.
 evaporated, colour of, B., 571.
 irradiation of, B., 1066.
 heat-resistant micro-organisms in, B., 1066.
 determination in, of calcium, magnesium, and phosphorus, B., 285.
 ewe's, variations in composition of, A., 379.
 fresh, enzymic and oxidising systems of, A., 884.
 raw, oxygen consumption by, A., 773.
 indophenol-oxidase in, A., 773.
 goat's, butter from, B., 475.
 hard- and soft-curd and mastitis-, heat-stability of, B., 873.
 human, A., 379.
 effect of diet on, A., 511.
 calcium in, A., 1266.
 variation in fat of, during suckling, A., 1398.
 iodine in, A., 106.
 "menstruation poisons" in, A., 647.
 nicotino content of, of smoking women, A., 118.
 vitamin-C content of, A., 417, 546.
 skimmed, iodine in, from goitrous and non-goitrous regions, A., 1009.
 determination in, of carotene and vitamin-A, A., 1427.
- Indian**, spectrography of, A., 1398.
 cryoscopy of, A., 1005.
 Indian buffalo and cow, food value of, B., 1115.
 irradiated, feeding value of, B., 698.
 antirachitic value of, A., 417.
 mastitis, detection of, B., 1066.
 "non-acid," detection of, B., 250.
 pasteurised, bottled, in Budapest, *coli* index of, B., 825.
 detection of, B., 825.
 raw and pasteurised, effect of, on nutritional anæmia, A., 1147.
 "ropy," B., 1115.

- Milk**, skim, action of potassium hydroxide on colloids in, B., 781.
 nutritive properties of, A., 242.
 dried, effect of process of manufacture on vitamin- B_2 content of, A., 416.
 vitamin- B_2 content of, and of dried whey, A., 1546.
 "skyr," preservation of, (P.), B., 173.
 soft-curd, production of, B., 1066.
 vitamin-A-free, synthetic, A., 1428.
 yeasted, (P.), B., 380.
 yoghurt, testing of, B., 331.
- Milk fat**, action of, as foam depressant, B., 571.
- Milk fever**, chemotherapy of, with calcium borogluconate, A., 774.
 serum-calcium and -magnesium in, A., 385.
 in pregnant cows and ewes, A., 1270.
- Milk machines**, sterilisation of, with lye and chlorine solutions, B., 873.
- Milk of lime**. See Calcium hydroxide.
- Milk powder**, manufacture of, (P.), B., 286.
 from whole milk, (P.), B., 876.
 nutritive value of, produced by spray-drying, B., 521.
 for A.A.C.C. cake-baking test, B., 651.
 free-flowing, production of, (P.), B., 429.
- Milk products**, manufacture of, (P.), B., 380, 748, 827.
 pasteurisation and deodorisation of, (P.), B., 78.
 diacetyl in, B., 521.
 for chocolate, etc., (P.), B., 429.
 for ice cream, (P.), B., 123.
 for infants, manufacture of, (P.), B., 1065.
 detection of thickening materials in, B., 42.
 determination in, of potassium, B., 204.
- Mills**, (P.), B., 435.
 cooling of rollers in, (P.), B., 754.
 synthetic stones for, B., 577.
 control of output and grinding in, B., 1.
 for grinding, crushing, and mixing, (P.), B., 658.
 for grinding plant materials, A., 554.
 for ores, etc., (P.), B., 657.
 for paints, etc., (P.), B., 833.
 ball, (P.), B., 289.
 ball and pebble, B., 49.
 ball or tube, (P.), B., 705, 1026.
 ball rotating, B., 1025.
 beater, (P.), B., 657.
 colloid. See under Colloids.
 crushing, (P.), B., 3.
 gyratory, (P.), B., 929.
 crushing and grinding, rotary, (P.), B., 1074.
 disc, (P.), B., 50.
 dual-fed, (P.), B., 1026.
 granulating and pulverising, (P.), B., 882.
 grinding, (P.), B., 129, 210, 531, 929, 1026, 1074.
 operation of, (P.), B., 434.
 with air-scaling device, (P.), B., 386.
 ball-and-race, ball pusher for, (P.), B., 706.
 grinding and mixing, (P.), B., 50.
 wet-grinding, (P.), B., 882.
 hammer, (P.), B., 178, 386.
 laboratory, A., 321.
 mixing, (P.), B., 532.
 pulverised fuel, (P.), B., 661.
 pulverising, (P.), B., 482.
 rolling, (P.), B., 1074.
 springs for rollers of, (P.), B., 834.
 tube, (P.), B., 787.
 tumbling, (P.), B., 481.
- Millet**, seed treatment for control of kernel smut of, B., 568.
- Mills-Nixon effect**, wave mechanics of, A., 1057.
- Milo**, effect of soil treatment on root, crown, and shoot rot of, B., 167.
- Milowite**, A., 1101.
- Mimosa**, effect of performance of physical work on, A., 1431.
- Mimule tree**, sap of, B., 819.
- Mindigite**, A., 190.
- Mines**, conditioning of air in, B., 926.
 corrosion of steel sleepers in, B., 635.
 coal, inert dusts used in, B., 482.
 prevention of gas explosions in, B., 835.
 ignition of methane by explosives used in, B., 335.
 Ohio, control of drainage of, into rivers, B., 1072.
- Minerals**, X-ray analysis of structure of, A., 163.
 facies of, in metamorphic rocks, A., 725.
 rôle of riparian plants in formation of, A., 1479.
 purification of, by extraction with mixed solvents, (P.), B., 403.
 separation of, (P.), B., 210.
 recovery of bromoform in, B., 501.
 flotation of, (P.), B., 29, 506, 772.
 collector for, (P.), B., 193.
 sulphur-bearing collectors for, B., 25.
 mills for, (P.), B., 657.
 pulverising of, (P.), B., 882.
 luminescence of, excited by X-rays, A., 565.
 electrical properties of aggregates of, A., 1303.
 constancy of uranium-actinium ratio in, A., 322.
 anomalous heat effects of, A., 448.
 high-temperature associations in, at various depths, A., 955.
 deuterium oxide in water of crystallisation of, A., 1477.
 determination of sp. gr. of, micropyk-nometrically, A., 952.
 natural gel of, from Vashogay, A., 1479.
 apparatus for air-free decomposition of samples of, A., 1341.
 calculation of percentages in, A., 952.
 staining of, for identification, A., 1345.
 testing of, B., 855.
 aluminosilicate, effect of repeated firing on, B., 768.
 of Barnavave, Irish Free State, A., 954.
 bituminous, Syukeev, B., 53.
 of the Blea Wyke series, A., 954.
 carbonate, thermal decomposition of, A., 323.
 of the Charnockite series of Uganda, A., 1102.
 Chili, nitrate, salt systems of, B., 848.
 of exogenous contact-zone at Ben Bullen, New South Wales, A., 1220.
 of the Franconian Wellenkalk, A., 842.
 hydroclastic, of Czeremosz district, A., 956.
 of Jamestown, Colorado, A., 1101.
 Madagascar, rare earths in, A., 468.
 of Mariupol, and their use in silicate industry, B., 725.
 metallic, reflecting power standards for microscopy of, A., 839.
 of Mourne Dyke Swarm, A., 1102.
 non-silicate, with cristobalite structure, A., 921.
 opaque, testing of, by method of imprints, A., 1478.
 detection of, in polished surfaces, A., 463.
- Minerals at Oroana, Nevada**, A., 955.
 organic, A., 727.
 oxide, action of salts in flotation of, B., 771.
 of Pocloe Borhala, A., 1100.
 powdered, apparatus for determination of magnetic constants of, A., 1341.
 magnetic properties of, A., 1310.
 Rhine valley, radioactivity of, A., 190.
 of Sardinia, A., 190; B., 951.
 silicate, alkalinity of, A., 322.
 sulphate, fluorescence of, A., 1479.
 sulphated, of Chili, A., 1100.
 sulphide, platinum content of, A., 602.
 reactions of, with metals, A., 716.
 in Shotover River district, A., 322.
 sulphur, of Schor-Su, low-grade, combustion of, B., 21.
 of White Raven mine, Colorado, A., 955.
 analysis of, with the spectro-polariscope, A., 58.
 analysis of gases in, A., 52.
 fluorescence analysis of, A., 186.
 microchemical analysis of, A., 319.
 detection in, of small quantities of constituents, A., 950.
 determination of, colorimetrically, A., 596.
 in polished surfaces, A., 463.
 determination in, of alkali metals, A., 54.
 of carbon, A., 53.
 of radium, A., 54.
 of stibnite sulphur, B., 1049.
- Mineral electrodes**. See under Electrodes.
- Mineralisation**, A., 1099.
- Minium**. See Red lead.
- Mint oil**, Japanese, detection of, in pepper-mint oils, B., 749.
 detection of, by furfuraldehyde test in essential oils, B., 1118.
- Minyulite**, from Dandaragan, W.A., A., 1479.
- Mirabilite**, decomposition of, with ammonia and carbon dioxide, B., 145.
- Mirrors**, manufacture of, (P.), B., 769.
 silvering of, (P.), B., 107.
 aluminium, production of, (P.), B., 957.
- "Miso," ripening of**, B., 1160.
- Mists**, absorption of, by liquids, A., 1067.
- Mistletoe**, phosphorus metabolism in leaves of, A., 265.
- Mites**, red, control of, with oil sprays, B., 691.
- Mitochondria**, preparation and properties of, A., 375.
- Mitragyna stipulosa**, alkaloids of, A., 366.
- Mitraphylline**, isolation of, from *Mitragyna stipulosa*, A., 366.
- Mitrinermine**, isolation of, from *Mitragyna stipulosa*, A., 366.
- Mixing**, mathematical treatment of problems in, B., 432.
- Mixing apparatus**, (P.), B., 387, 609, 787, 1075, 1121.
 whisks for, (P.), B., 931.
 for concrete, mortar, etc., (P.), B., 1096.
 for gases and liquids, (P.), B., 290.
 for solids, (P.), B., 434.
 continuous, determination of efficiency of, B., 609.
 heart-shaped, (P.), B., 883.
 rotary, (P.), B., 434.
- Mixing machines**, (P.), B., 3, 83, 290, 386, 532, 1075.
- Mixtures**, binary, f.p. of, A., 1077.
 viscosity of, A., 817, 1066.
 eutectic. See Eutectics.
 eutropic, mixed m.p. in, A., 1456.
 low-melting, phase diagrams of, A., 447.

Molasses, formation of, and crystallisation of sugar, B., 870, 920.
 treatment of, with dolomite, B., 823.
 removal of proteins from fermentation liquors of, with fuller's earth gels, B., 283.
 de-sugaring of, with regenerated press-cake, B., 1063.
 alteration in colour between thick sugar juice and, B., 201.
 effect of activated carbon on fermentation of, B., 1016.
 colloids in, A., 1485.
 potassium in, B., 823.
 production of resins from, (P.), B., 915.
 production of bakers' yeast from, B., 518.
 beet, amino-acids in, and rate of crystallisation, B., 75.
 sulphur dioxide in, B., 119, 692.
 cane, point of exhaustion of, B., 473.
 use of, as feeding-stuff for cattle, B., 476.
 feeding value of, B., 44.
 application of, on swamp soils, B., 116.
 Formosan, colouring substances in, B., 870.
 Java, exhaustibility of, B., 75.
 powdered, manufacture of, (P.), B., 1064.
 waste, utilisation of, B., 1015.
 analysis of, B., 778.
 determination in, of potassium, B., 328.
Moles, hydatidiform, oestrin in, A., 1425.
Molecular attraction in absence of polarity, A., 810.
 polarisation. See under Polarisation.
 refraction. See under Refraction.
 volume. See under Volume.
Molecular weights, determination of, A., 700, 1476.
 with *tert.*-butyl alcohol as solvent, A., 699.
 microchemically, A., 1476.
 by Rast's method, A., 1476.
 boiling vessel for ebullioscopic determination of, A., 1096.
 of liquids, A., 435, 814.
 of linear macromolecules, etc., A., 688, 1073.
 of mixtures of polymerides, A., 1219.
 of organic compounds in relation to vitrification temperature, A., 1062.
 high, behaviour of compounds of, in solution, A., 579.
 diffusion of compounds of, A., 1072.
Molecules, structure of, and crystal symmetry, A., 921.
 and rate of reaction, A., 41.
 electronic structure of, A., 1306, 1452.
 electronic configuration and electron affinity of, A., 150.
 quantum-mechanical treatment of, A., 685.
 models of, A., 150, 432, 685.
 vibration of mechanical models of, A., 432, 568, 918.
 excitation of vibration of, by impact of slow electrons, A., 557.
 transfer of vibrational energy between, A., 15.
 calculation of vibration frequencies of, A., 10.
 unequal potential minima and torsion oscillation of, A., 1448.
 perturbations of levels in, A., 917.
 orientation of, and their dissociation by electron impact, A., 1185.
 comparison of magnitudes of, and of colloidal micelles, A., 1072.
 surface energy and physico-chemical properties of, A., 21.

Molecules, relation between spectra and electrons and electron rings of, A., 281.
 influence of cyclisation on colour of, A., 82.
 arrangement of, in liquids, A., 152.
 rotational state of, in liquids, A., 430.
 scattering and association of, A., 146.
 viscosity and association of, A., 438.
 affinity factors in collisions of, A., 1448.
 interaction of, with solid surfaces, A., 1070.
 detection of, by time of relaxation of polar molecules, A., 684.
 function of hydrogen in forces between, A., 1307.
 activated, inactivation of, A., 284.
 associated, dipole moments of, A., 430.
 diatomic, formation and dissociation of, A., 279.
 internuclear distance and vibration frequency of, A., 685.
 vibrations of, A., 150.
 molecular constants and potential energy of, A., 1193.
 rotation of, A., 15.
 transitions in spectra of, A., 1292.
 potential energy of, A., 15.
 energy formula and potential distribution of, A., 1305.
 potential curves for, A., 432, 685.
 and their spectroscopic determination, A., 1448.
 dissociation of, A., 1057.
 addition of, to benzene, A., 284.
 non-hydride, periodic functions of, A., 432, 1057.
 rotating-vibrating, demonstration of, A., 1342.
 triatomic, Raman effect of, A., 11, 145.
 wave equation for, A., 1305.
 linear, interaction of electronic and nuclear motion for, A., 15.
 tetraatomic, symmetrical, vibrations of, A., 432.
 polyatomic, electronic structure of, A., 1188.
 electronic structure and valency and, A., 1057.
 vibrational isotope effects in, A., 10, 1448.
 rotational levels of, A., 810.
 rotational energy of, A., 570.
 rotational entropy of, A., 1064.
 vibration of, in excited electronic states, A., 1057.
 electronic spectra of, A., 914.
 photo-dissociation of, A., 562, 682.
 potential functions of, A., 569.
 free energy of, from spectroscopic data, A., 811.
 kinetic energy of, A., 685.
 containing ethyl and methyl radicals, absorption spectra of, A., 1188.
 chain, A., 150.
 complex, behaviour of, in solution, A., 700.
 dipole, properties of layers of, A., 430.
 ellipsoidal, dielectric dispersion for, A., 15.
 fluorescent, thermal rotation of, A., 681.
 with groups capable of free rotation, dipole moment and Raman effect of, A., 12.
 isotopic, vibration frequencies of, A., 685.
 dipole moments of, A., 1304.
 with octahedral symmetry, normal vibrations of, A., 15.
 open-chain, formation of cyclic compounds from, A., 203.
 organic, rotating polar groups in, A., 1192.

Molecules, physical, proof of vibrational movement of, A., 284.
 simple, structure of, by electron interference, A., 687.
 of type X_6 , fundamental frequencies of, A., 685.
 of type X_6 and X_6Y_6 , oscillations of, A., 150.
 unsymmetrical, orientation of, A., 1057.
 van der Waals, spectrum of, A., 1292.
Y Molecules, atomic vibrations of, A., 806.
Molinia carulea, hydrocyanic acid in, A., 265.
Molluscs, uricotelic, metabolism and habitat in, A., 388.
Molybdenite, flotation of, (P.), B., 857.
 oxidising furnace for, (P.), B., 1051.
 Australian, rhenium from, A., 716.
Molybdenite-quartz, of Shih-ping-chuan, Tsingtien, Chekiang, A., 190.
Molybdenum, occurrence of, in oxidised lead deposits, A., 60.
 recovery of, from spent catalysts, (P.), B., 495.
 spectrum of, A., 423.
 arc spectrum of, A., 136.
 cathode rays expelled from metals by K_α rays of, A., 908.
 emission of electrons from, by action of mercury ions, A., 1047.
 energy distribution of secondary electrons from, A., 1047.
 heat of vaporisation of electrons for, A., 801.
 temperature scale of, A., 1312.
 rate of vaporisation of, *in vacuo*, A., 156.
 effect of electrostatic fields on vaporisation of, A., 21.
 surface ionisation of potassium on, A., 273.
 soldering of, to copper, A., 189.
 content of, in leaves, A., 552.
 in teeth, A., 1004.
 ionised, spectrum of, A., 1183.
Molybdenum alloys, with iron and nickel, A., 23.
 with tungsten, electron emission of, A., 273.
Molybdenum trioxide, condensation of, with boric acid, A., 166.
 pentoxide, adsorption by, of carbon monoxide and hydrogen, A., 27.
 oxides, reaction of, with carbon monoxide, A., 44.
 disulphide, hydrogenation of aromatic hydrocarbons on, A., 940.
Molybdates, determination of, conductometrically, with silver nitrate, A., 1474.
Molybdate ions, effect of p_H on, A., 1322.
Molybdenum organic compounds:—
 Molybdenum hexacarbonyl, and its organic derivatives, A., 314.
 crystal structure of, A., 686.
Molybdenum determination:—
 determination of, colorimetrically, using cyclohexanol, A., 56.
 gravimetrically, as silver molybdate, A., 187.
 in presence of iron, iodometrically, A., 951.
 in ores and rocks, potentiometrically, B., 677.
 in plants and soils, A., 1179.
 in steel, colorimetrically, B., 360.
 with 8-hydroxyquinoline, B., 410.
 potentiometrically, B., 63.
 potentiometrically, in steel, iron alloys, slags, etc., B., 677.
 in alloy steel in presence of tungsten, B., 458.
 in special steels, colorimetrically, B., 952.

- Molybdenum** buttons, casting of, in brass for X-ray tubes, A., 1218.
- Molybdenum** ores, sulphide, Canadian, treatment of, B., 312.
- Molybdenum** wire, drawing of, (P.), B., 362.
- chromium-plating of, (P.), B., 506.
- Moments**, measurement of, with a chronometric motor, A., 467.
- Monarda fistulosa*, sterols from, A., 797.
- Monazite**, heat production of, A., 448.
- specific heat of, A., 289, 690.
- age of, in pegmatites of N. Carelia, A., 841.
- analysis of small amounts of, A., 1216.
- K-Monel metal**, properties of, B., 594.
- Monkeys**, respiratory metabolism of, A., 777.
- Morrhromator**, vacuum, A., 1217.
- Mononucleosis**, infectious, heterophile antibodies in, A., 1395.
- Monosaccharides**, microchemical analysis of, A., 477.
- Monoses**, catalysis of formaldehyde condensation by, A., 733, 1224.
- Montan wax**. See under Wax.
- Monticellite** from Crestmore, California, A., 725.
- Montmorillonite**, formula of, A., 1345.
- synthesis of, A., 601.
- relation of, to nontronite, A., 1345.
- Moorlands**, utilisation of, B., 1079.
- Moranyl compounds**, effect of, on colloids and on diphtheria toxin, A., 408.
- precipitation of ferric oxide hydrosols by, A., 164.
- Mordanting and dyeing**, A., 301; B., 302, 818, 864, 1008.
- use of cobalt in, B., 897.
- titanium compounds for use in, (P.), B., 147.
- Moroctic acid**, isolation and constitution of, A., 1105.
- methyl ester, and its octabromide, and tetrathioacyano-, methyl ester, A., 1105.
- Morphanthridones**, A., 992.
- Morphenol**, preparation of, from morphine, A., 366.
- Morphine**, and its derivatives, A., 780.
- dielectric potential of, A., 30.
- solubility of, in various solvents, A., 577.
- preparation of morphenol from, A., 366.
- 2:4-dinitrophenyl ether, and its salts, A., 506.
- in opium juice, B., 1022.
- action of vegetable juices on, A., 671.
- and its derivatives, pharmacology of, A., 245.
- acidosis from, A., 246.
- effect of, after anaesthesia, A., 893.
- increase of local anaesthesia by, A., 1532.
- effect of yohimbine on action of, on blood-sugar, A., 893.
- action of, on permeability of brain of theophyllinised guinea-pigs to sodium ferrocyanide, A., 528.
- hyperglycaemia from, A., 397, 528, 1410.
- action of, and of dilaudid on small intestine of dogs, A., 528.
- and its derivatives, motor effects of, on Thierry fistula, A., 1019.
- metabolism during chronic action of, A., 397.
- effect of, on oxygen consumption by rat's brain, A., 528.
- and its derivatives, effect of, on respiration, A., 528, 1018.
- detection of, in papaverine hydrochloride, with iodic acid, A., 769.
- determination of, A., 507; B., 1067.
- in small quantities, A., 640.
- Morphine**, determination of, colorimetrically, A., 877; B., 477, 877.
- iodometrically, B., 79.
- in biological fluids, colorimetrically, A., 397.
- in brain, A., 1156.
- in opium, by lime method, B., 45, 573.
- α - and β -isoMorphines, hydrogenation of, A., 505.
- apoMorphine**, preparation of, B., 828.
- hydrochloride, effect of boric acid on solutions of, A., 637.
- boryl derivative, A., 637.
- determination of, in tissues, A., 1018.
- Morphine series**, reduction in, A., 99, 505.
- Morphology**, units of measurement in, A., 798.
- Morrhucic acid**, sodium salt, intravenous sclerosis from, A., 655.
- Morse's rule**, modification of, A., 1448.
- periodicity of, A., 569.
- Mortar**, manufacture of, (P.), B., 632.
- building properties of, B., 903.
- working properties of, B., 229.
- mixers for, (P.), B., 1096.
- use of dolomite in, B., 675.
- use of trass cement in, B., 23.
- effect of cement composition on resistance to freezing and thawing of, B., 1044.
- effect of bentonite on plasticity of, B., 547.
- heat of hydration of, B., 547.
- water penetration and corrosion in, B., 24.
- waterproofing agents for, B., 547.
- for calcium chlorate manufacture, B., 852.
- building, containing rubber, manufacture of, (P.), B., 994.
- cement, hardening of, B., 497.
- hardening and electrical properties of, B., 547.
- use of iron blast-furnace slag in, B., 102.
- strength and resistance of, B., 455.
- hardened, expansion and corrosion of, B., 726.
- high-early-strength cement, effect of temperature and humidity on, B., 852.
- lime, (P.), B., 1097.
- silica, working properties of, B., 408.
- waterproof, production of, (P.), B., 675.
- determination of, in mixtures with concrete, B., 1096.
- Mosquitoes**, control of larvæ of, in water with calcium cyanamide, B., 384.
- larvicides for, B., 335, 1167.
- Moss**, Iceland, components of, A., 864.
- Moths**, serological studies of proteins of, A., 510.
- control of, (P.), B., 186.
- compounds for protection of textiles against, (P.), B., 444.
- protection of dried raw hides against, B., 418.
- protection of wool against, (P.), B., 98.
- bee. See *Galleria mellonella*.
- clothes, keratin digestion in larvæ of, A., 1006.
- inefficiency of *p*-dichlorobenzene, naphthalene, and cedar oils as repellents against, B., 945.
- use of tetrahydronaphthalene against, B., 224.
- codling-, prevention of spring emergence of, from inaccessible places on trees, B., 742.
- control of, B., 1014; (P.), B., 283.
- with arsenicals and nicotine, B., 326.
- in Delaware, B., 742.
- with nicotine, B., 326.
- Moths**, codling-, control of, with nicotine compounds, B., 742.
- by sprays, B., 516, 919.
- parasitism of, with *Ascogaster carpocapsa*, B., 742.
- codling- and peach, contact insecticides for eggs of, B., 742.
- Moth-proofing**, with sodium fluosilicate, effect of laundering on, B., 945.
- of animal fibres, (P.), B., 267.
- of textiles, B., 670.
- Motors**, gas producers for, B., 1123.
- electric, aluminium rotors for, (P.), B., 315.
- Motor spirit**, production of, from creosote, B., 660.
- effect of sulphuric acid on, B., 710.
- cracked, refining of, B., 934.
- use of, B., 710.
- testing of, B., 980.
- determination of acid value of, B., 710.
- Moulds** (biological), maintenance of vigorous cultures of, A., 254.
- metallic mixtures as co-catalysts of growth of, A., 535.
- inhibition of growth of, by cathode and X-rays, A., 788.
- on paints, B., 160.
- chemistry of, A., 535.
- formation and degradation of acids by, A., 124.
- formation of citric acid by, A., 1540.
- decomposition of formic acid by, A., 1166.
- conversion of guanidine into urea by, A., 254.
- formation of starch in, A., 1166.
- formation of sterols by, A., 1540.
- sulphopeptidase of, A., 1166.
- study of physiology of, with developed mycelia, A., 406.
- respiration and metabolism of, A., 254.
- tissues of, A., 255.
- Moulds**, (foundry), (P.), B., 105, 461.
- copper stools for, B., 1048.
- manufacture of cores for, (P.), B., 638.
- manufacture of facing materials for, (P.), B., 29.
- dressings for, (P.), B., 899.
- binding composition for sand cores for, (P.), B., 915.
- sand, production of, B., 26.
- Moulded articles**, bituminous, manufacture of, (P.), B., 915.
- containing inserts, (P.), B., 915.
- mottled, manufacture of, from thermoplastic cellulose materials, (P.), B., 816.
- products, production of, from casein, (P.), B., 915.
- Moulding**, of thermoplastic materials, (P.), B., 240.
- Moulding-black**, B., 534.
- Moulding compositions**, production of, from cellulose derivatives, (P.), B., 69.
- from cellulose esters, (P.), B., 1057.
- from sulphite-pulp waste liquor, (P.), B., 944.
- for cold-moulding, (P.), B., 368.
- coloured, (P.), B., 1152.
- manufacture of, (P.), B., 195.
- hot-, manufacture of, (P.), B., 1057.
- resinous, manufacture of, from saccharides, (P.), B., 70.
- dyes for, (P.), B., 57.
- materials, plasticity of, B., 366.
- powders, manufacture of, from cellulose esters and ethers, (P.), B., 162.
- production of tablets from, (P.), B., 1104.

- Moulding powders**, ebonite and rubber, manufacture of, (P.), B., 776.
Mouth washes, (P.), B., 256.
Mucic acid, chloralide of, A., 329.
alloMucic acid, Fischer's, A., 846.
Mucin, solvent for, (P.), B., 656.
 histological staining of, A., 1043.
Mucins, A., 1267.
 ψ -Mucin, guanidine nucleus in, A., 1266.
Mucoids, A., 1267.
Mucoitinsulphuric acid, enzymic degradation of, A., 402.
 from canine gastric juice, A., 773.
Muconic acid, A., 196.
 sodium salt, catalytic hydrogenation of, A., 175.
Muconic acid, β -bromo-, and α -chloro-, A., 731.
Muconolactone, β -chloro-, A., 1361.
Mucor hiemalis, β -carotene from, A., 406.
Mucorineae, effect of growth factors on, A., 406.
 influence of vitamin-B₁ and wheat-germ oil on, A., 1175.
Mucous membranes, keratinisation of, in carotene and vitamin-A deficiency, A., 668.
Mucus, staining of, with methylene-blue, A., 1399.
Mud, effect of, on electrical profiles of rocks, A., 1347.
 of the Black Sea, biochemistry of, A., 406.
 medicinal, therapy with, A., 781.
 Paris activated, nitrifying bacteria in, A., 899.
 radioactive, effect of, on germination and growth of seeds, A., 799.
Müller's lactone, formation of, from hydrochloroterresantallic acid, A., 618.
Mu-fang-chi, alkaloids of, A., 1433.
Mugil cephalus, bile acids of, A., 1524.
 proteins of muscle of, A., 1144.
Mulberry leaves, digestion of carbohydrates in, by silkworms, A., 523.
 proteins in, A., 1146.
 quercetin glucoside from, A., 883.
Mullen, chemistry of flowers of, A., 1435.
Mullite, dispersion of, A., 1346.
Murnpeowie, A., 601.
Mus musculus, changes in blood of, during growth, A., 372.
Musa, production of cellulose from fibres of, (P.), B., 624.
 manufacture of transparent sheets from fibres of, (P.), B., 400.
Muscle, physico-chemical constants of, A., 1522.
 potassium in electrochemistry of, A., 387.
 membrane potential of, in relation to excitability, A., 388.
 influence of work and training on oxidation-reduction potential of, A., 1522.
 production of heat by, A., 779.
 after stretching, A., 1414.
 viscosity and plasticity in, A., 109.
 permeability and ion concentration in excitation of, A., 239.
 swelling of, in adrenalectomy, A., 410.
 change of p_{H} on stretching of, A., 520.
 ethyl alcohol as oxidation material in activity of, A., 1409.
 oxygen consumption in activity of, A., 1529.
 chemical changes in contraction of, A., 117.
 in normal and adrenalectomised animals, A., 109.
Muscle, chemical and physical processes in contraction of, A., 109.
 action of adrenaline on metabolism of, A., 1031.
 transparency and action metabolism of, A., 388.
 relation between metabolism of, and weather, A., 387, 890.
 effect of insulin on, A., 538.
 effect of training and fatigue on reducing power of, A., 1522.
 production of rigidity in, by iodoacetic acid, A., 1263.
 effect of training on synthesis in, after work, A., 1521.
 chemistry of, A., 1521.
 effect of extirpation of motor region on, A., 1521.
 chemical changes in, A., 1012.
 co-ordination of chemical processes in, A., 890.
 chemical reactions in, A., 239, 387, 1150.
 reversible, A., 1151.
 transformations of adenosinetriphosphoric acid in, A., 778.
 alkalinisation of, during contraction, A., 520.
 effect of various diets on amino-acids of, A., 1521.
 effect of thyroidectomy on amino-acids of, A., 1521.
 ammonia in, A., 110.
 formation of, A., 387.
 ammonia formation and content in, A., 1004.
 carbohydrate and respiratory metabolism in, in alkalosis, A., 520.
 carnitine, choline, and acetylcholine in, A., 1003.
 effect of training and fatigue on catalase of, A., 1535.
 action of poisons on dehydrogenases and oxidases of, A., 1277.
 glutathione in, in relation to exercise, A., 645.
 effect of training and fatigue on, A., 1522.
 glycogen in, A., 1004.
 regulation of, by nervous system, A., 1408.
 effect of sympathetic stimulation and of adrenaline on, A., 780.
 degradation of, A., 249.
 glycogenesis in, in splenectomy, A., 410.
 action of bromoacetic acid and fluoride on glycolysis in, A., 250.
 role of glutathione in glycolysis in, A., 1278.
 synthesis of inosinic acid in, A., 1481.
 conversion of lactic acid into pyruvic acid by, A., 240.
 effect of hydrogen carbonate ions on lactic acid in, A., 1017.
 magnesium content of, in scurvy, A., 238.
 effect of diet on nitrogen and phosphorus of, in fatigue, A., 1521.
 post-mortem changes in non-protein carbon and nitrogen in, A., 376.
 effect of insulin on production of optically active substances in glucose-salt mixtures with, A., 1543.
 production of phosphoglyceric acid in, and its significance for glycolysis, A., 250.
 phospholipins in, A., 109.
 phosphorus in, in adrenal insufficiency, A., 258.
 effect of insulin on phosphorus exchange in, A., 1543.
 potassium in, A., 232, 377.
Muscle proteins, α - β -change of, A., 772.
 compounds of, with dextrin, A., 882.
 sex differences in, A., 377.
 proteinases and proteolysis in, A., 1537.
 effect of adrenaline on exchange of sugar between blood and, A., 127.
 substance from vagus nerve which sensitises, to acetylcholine, A., 244.
 fatigue of, in relation to liberation of acetylcholine, A., 529.
 effect of curarising poisons on, A., 245.
 fatigue in preparations of nerve and, A., 782.
 effect of anaesthetics on, A., 893.
 effect of calcium concentration on narcosis in, A., 525.
 effect of extirpation of motility region of brain on, A., 645.
 poisoning of, with iodoacetic acid, A., 239.
 creatine metabolism in diseases of, A., 383.
 effect of gelatin feeding on dystrophy of, A., 383.
 treatment of dystrophy of, with glycine, A., 383.
 active, influence of cortical hormone and ascorbic acid on chemistry of, A., 239.
 of animals with low glycogen, carbohydrate and respiratory metabolism in, A., 520.
 cardiac, acetylcholine in, after vagus stimulation, A., 116.
 enzymic decomposition of adenosinetriphosphoric acid in, A., 122.
 liberation of calcium in stimulation of, A., 524.
 anaerobic carbon dioxide in, A., 890.
 transformations of nucleotides in, A., 778.
 effect of ventricular fibrillation on bound water of, A., 775.
 cardiac and skeletal elements in, and in bladder and uterus, A., 511.
 cardiac and striated, oxidation of sugar by, in avitaminosis-B, A., 130.
 cat's and dog's, sympathetic dilator fibres in, A., 1410.
 of horned cattle, albumose and peptone content of, A., 1522.
 of cold-blooded animals, action of iodoacetic acid on, A., 1276.
 liberation of polar localised phosphoric acid by, A., 387.
 dog's, lactic fermentation in, A., 110.
 phosphorus compounds in, A., 521.
 of depancreatised dogs, respiratory quotient of, A., 777.
 dog's and rabbit's, extractives of, A., 1266.
 fish, creatine phosphoric acid in, A., 1521.
 post-mortem break-down of glycogen and lactic acid formation in, at low temperatures, A., 658.
 nitrogen and phosphorus compounds in, A., 1522.
 fish and lobster, non-protein nitrogenous constituents of, A., 1397.
 fluoride-poisoned, isolation of glycero-phosphoric acid from, A., 250.
 frog's, seasonal variations in constituents of, A., 1003.
 respiratory quotient of, A., 890.
 permeability of, A., 239.
 effect of creatine on, A., 238.
 intermediate enzyme from, A., 400.
 metabolism in, A., 519.
 effect of radon on phosphorus elimination by, A., 1023.
 sodium and chloride in, A., 772.

Muscle, giant salamander, A., 1521.
gluteal, horse's, stony deposits in, A., 1397.
guinea-pig's, action of curare and of tetanus toxin on potassium of, A., 528.
human, potassium in, A., 883.
mammalian, rôle of phosphocreatine in contraction of, A., 109.
skeletal, physiology of, A., 1265.
carnosine and anserine in, A., 882.
of marine animals, composition of, A., 1144.
rabbit's, effect of sodium fluoride on phosphate metabolism of, A., 1161.
rat's, flavin content of, A., 669.
effect of diet on glycogen distribution in, A., 111.
skeletal, gaseous metabolism of prolonged contraction of, A., 387.
action of electrolytes on electrical stimulation of, A., 1023.
function of sympathetic nerves in relation to, A., 116.
action of phenanthrene derivatives on, A., 1019.
arginase in, A., 1417.
striated, influence of sympathetic stimulation on composition and properties of, A., 645.
glycolysis in, A., 251.
action of *p*-phenylenediamine on, A., 1533.
of hypophysectomised toads, lactic acid in, A., 259.
determination in, of guanine, iodometrically, A., 1266.
of hæmoglobin, A., 1397.
of lactic acid, A., 232.
of proteins, A., 231.
of fermentable sugar, A., 1397.
Muscle extracts, chemical changes in, A., 1278.
enzymes in, A., 782.
acting on hexose phosphates, A., 1270.
influence of adenylic acid on oxidative enzymic processes in, A., 532.
hydrolysis of glycogen by, A., 533.
activation of glycolytic enzymes of, A., 1536.
influence of sodium thioglycollate on, A., 1418.
Muscovite, dispersion of double refraction of, A., 1102.
infra-red spectrum of, A., 145.
Muscular exercise, non-utilisation of alcohol during, A., 387.
colloid-osmotic pressure of blood in, A., 517.
blood-lactic acid and oxygen consumption in, A., 239.
phosphate metabolism in, A., 1150.
influence of phosphate on distribution of water and salts in, A., 239.
effect of, on urinary lipase, A., 110.
anaerobic, sources of energy in, A., 110.
Mushrooms, composts for culture of, B., 516.
effect of sodium chlorate weed-killer on growth of, B., 690.
protection of spawn for, against spring-tails and pests, B., 743.
control of pests on, by sulphur fumigation, B., 969.
p-glucosidase of, A., 69.
essential oils from, B., 573.
Japanese, constituents of, A., 673.
Mussels, poison from. See under Poisons.
Musts, apparatus for distillation of, (P.), B., 170.
density and alcohol content of, B., 376.

Musts, copper in, B., 920.
calculation of sugar for improvement of, B., 779.
of dry warm 1934 season in Biterrois and Saint-Pons regions, B., 695.
grape, elimination of copper from, B., 41.
nitrogen balance in, B., 376.
determination in, of iron and copper, B., 744.
sweet, enzymic clarification of, B., 376.
Mustard, testing of, for mayonnaise, B., 251.
determination in, of salt, B., 1020.
"Mustard gas." See Diethyl sulphide, dichloro-.
Mustard oils, B., 732.
development of odour and flavour of, B., 732.
saturation pressure of, A., 966.
detection in, of linseed oil, B., 365.
Mustard plants, nutrient intake of, from undisturbed and flowing nutrients, A., 131.
Mutton, preservation of, (P.), B., 748.
Mya arenaria, composition of crystalline style of, A., 1398.
Myasthenia gravis, liver-arginase in, A., 1527.
Mycobacterium tuberculosis, dissociation of, A., 537.
Mycorrhiza, in relation to forestry, B., 968.
Myelin, degenerating, staining of, A., 1146.
Myeloma, multiple, precipitation of serum-proteins in, A., 1402.
Mylonites, from San Andreas, California, A., 956.
Myofibrils, crystal structure of, A., 1003.
Myosalvarsan, avidity value of, A., 120.
Myosin, α - β -transformation of, A., 376.
spreading of, A., 161.
expansion of films of, on potassium lactate, A., 1201.
Myrcene, formation of, by dehydration of linalool, A., 88.
Myristic acid, structure of monomolecular layers of, A., 29.
condensation of, with formaldehyde, in presence of acetic acid, A., 213.
 β -*n*-butoxyethyl, α -butylene, methylene, $\alpha\beta$ -propylene, and tetramethylene esters, A., 730.
Myristicin, isolation of, as additive compound with bromine, A., 208.
***n*-Myristylsulphonic acid**, sodium salt, A., 606.
Myrrh, *n*-nonacosane from, A., 1180.
***dl*-trans-Myrtanal**, and its semicarbazone, A., 1376.
***dl*-cis-(iso)Myrtanal**, and its semicarbazone, A., 1376.
***dl*-trans-Myrtanol**, and its hydrogen phthalate, A., 1376.
***l*-trans-Myrtanol**, and its esters, A., 1375.
***cis*-(iso)Myrtanols**, and their esters, A., 1376.
***d*-Myrtanal**, derivatives of, A., 350.
***dl*-Myrtanal**, and its derivatives, A., 1375.
Myrtanol, synthesis of, A., 624.
***d*-Myrtanol**, identity of darwinol with, A., 350.
Myrtanols, and their esters and derivatives, A., 1375.
Myrtanol series, syntheses in, A., 1375.
***l*-Myrtanyl chloride**, A., 1375.
***d*-Myrtenylideneacetone**, and its derivatives, A., 1375.
neoMyrtillin, in blueberry as cure for diabetes, A., 516.
Mytilus, control of ciliary motion of, by ionic equilibrium, A., 530.

Myxœdema, basal metabolism and impedance angle in, A., 108.
hyperglycæmia and hypoglycæmia in, A., 1009.
treatment of, with thyrotropic hormone, A., 1527.

N

Naphtha, refining of gasoline and, B., 581.
countercurrent washing of, (P.), B., 178.
removal of mercaptans from, B., 887.
colour stabilisation of, (P.), B., 1128.
Naphthacene, homologues of, A., 334.
1'2'-Naphtha-2:3-fluorene, A., 1359.
1'2'-Naphtha-2:3-fluorenone, A., 1359.
2'1'-Naphtha-1:2-fluorenone, A., 75.
Naphthafuchsone-1, 6-bromo-2-hydroxy-, A., 1243.
1:4-Naphthafuchsone-1, 2-hydroxy-, and its derivatives and tautomerism with diphenylmethyl-1:2-naphthaquinone, A., 1243.
Naphthalene molecules, symmetry of, A., 853.
optical polarisability of, A., 565.
structure of, A., 1230, 1447.
and its 2-methyl derivative, in Rumanian crude oil, B., 1081.
recovery of, from coal gas, (P.), B., 440.
and its derivatives, Raman spectra of, A., 914.
electrical conductivity of, A., 683.
crystals, Raman effect in, A., 564.
equilibrium of, with dibenzyl and diphenyl, A., 448.
with α - and β -naphthols, A., 704.
mixtures of acetone and, and solubility of a third substance therein, A., 1457.
hydrogenation of, B., 795; (P.), B., 1133.
hydrogenation of mixtures of cresols and, B., 1036.
sulphonation of, A., 1116.
condensation of, with phthalic anhydride, A., 1243.
tricyclic compounds containing heterocyclic component and, A., 761.
derivatives, action of hydroxylamine on, A., 744.
diallyl and methyl ethyl ethers, 2:6-*di*-hydroxy-, A., 1230.
dewaxing of petroleum with, B., 133.
contamination of coal gas with, B., 53.
damage of sheep skins by, B., 600.
removal of, from coal-tar oils, B., 1080.
from coke-oven gas, B., 1080.
temperature of anthracene oil for, from coke-oven gas, B., 979.
metabolism of. See under Metabolism.
determination of, B., 1036.
with picric acid, B., 1129.
in coal gas, with picric acid, B., 933.
in gases, B., 341, 580.
in motor benzol, B., 885.
in poultry-lice powders, B., 74.
Naphthalene, bromo-derivatives, A., 968.
2-bromo-, nitration of, and 2-bromo-7-nitro-, A., 204.
6-bromo-1:2-*di*hydroxy-, diphenylmethyl-ene ether of, A., 1243.
chloro-derivatives, purification of, (P.), B., 140.
monochloro-, insecticidal action of, B., 1013.
3-chloro-1-nitro-, A., 77.
1:7-*di*hydroxy-, reactivity of naphtholic hydrogens of, and its derivatives, A., 856.

- Naphthalene**, nitro-derivatives, colour reactions of, and their spectrophotometric determination, A., 1116.
detection and spectrophotometric determination of, B., 617.
1-nitro-, analysis of, B., 297, 1084.
dinitro-, systems of picric acid and, A., 302.
- Naphthalenes**, *peri*-substituted, restricted rotation in, A., 618.
reactivity of, A., 618.
- Naphthaleneazotriphenylmethanes**, and their decomposition, A., 77.
- Naphthalenecarboxylic acids**, esters, reaction of, with Grignard reagents, A., 1234.
- Naphthalene-1:8-carboxysulphonic anhydride**, A., 618.
- Naphthalenediazonium compounds**, photographic developers from, (P.), B., 975.
- Naphthalene-4:8-disulphonic acid**, 2-nitro-, ferrous salt, manufacture of, (P.), B., 622.
- γ -2-Naphthalenesulphonamido- β -hydroxypropanesulphonic acid**, A., 1111.
- Naphthalene-1-sulphonic acid**, glycine salt, A., 1486.
- Naphthalene-2-sulphonic acid**, action of bromine on, and their bromo-derivatives, A., 612.
alanine, β -aminobutyric acid, glycine, and leucine salts, A., 1486.
- Naphthalenesulphonic acids**, A., 1360.
effects of substituents in naphthalene nucleus on tanning properties of, B., 738.
- N*-Naphthalene-2-sulphonyl-*S*-2:4-dinitrophenylglutathione**, A., 202.
- Naphthalenesulphoxyacetic acids**, and their alkaloid salts, A., 856.
- Naphthalene-1:4:5:8-tetracarboxylic acid**, manufacture of, (P.), B., 263.
- Naphthalomethylimide**, 3-*mono*- and 3:6-*di*-amino-, and their derivatives, 3-chloro-, 3-hydroxy-, and 3-*mono*- and 3:6-*di*-nitro-, A., 758.
- Naphthaloylnaphthol**, A., 1495.
- Naphthamidobenzeneazo- β -hydroxynaphthoic anilide**, β -hydroxy-, A., 1360.
- β -Naphthamidrazone**, reaction of, with acetic anhydride, A., 81.
- lin*-Naphthamorpholone**, A., 761.
- Naphthaphenoxazines**, preparation and reactions of, A., 633.
- Naphthapyranone methyl ether**, A., 1249.
- $\beta\alpha$ -5:6-Naphthapyrone**, 3-amino-, and 3-hydroxy-, and their derivatives, A., 354.
- α -Naphthaquinoline**, 4-cyano-, A., 93.
- β -Naphthaquinoline**, retarding of dissolving of aluminium in acid by, A., 309.
- Naphthaquinolines**, *di*- and *tri*-chloroiodides and iodycyanide, A., 356.
- Naphthaquinolinecarboxylic acids**, A., 93.
- β -Naphthaquinoline- α -carboxylic acid**, hydrochloride, A., 356.
- α -Naphthaquinone**, preparation of, from 4-nitroso- α -naphthol, A., 863.
- 1:4-Naphthaquinone**, 2-azide, A., 1243.
- 1:4-Naphthaquinone**, 2:3-*di*amino-, 2-acetyl derivative, and 2:3-*di*hydroxy-, and its diacetyl derivative, A., 1509.
- 6-chloro-, manufacture of, (P.), B., 621.
- 2-hydroxy-, 3-benzeneazo-derivative, A., 87.
- 2-*mono*- and 2:3-*di*-hydroxy-, tin complexes and pyridine salts of, A., 623.
- Naphthaquinones**, absorption spectra of, A., 347.
reduction potentials of, A., 585.
reduction of hydrazoic acid with, A., 1243.
- Naphthaquinones**, azides of, action of diazomethane derivatives on, A., 1243.
- Naphthaquinones**, hydroxy-, absorption spectra and colour reactions of, A., 623.
- 1:2-Naphthaquinone-6-sulphonic acid**, and its anhydride and dioxime, A., 970.
- Naphthastyril**, 4:5-dinitro-, A., 618.
- α -Naphthathiazole 1-carbamate**, A., 226.
- 2-Naphthathiophen-2'-[4'-aminonaphthalene]indigotins**, A., 1249.
- 2-Naphthathiophen-9'-anthraceneindolignones**, A., 1249.
- 2-Naphthathiophen-2'-[4'-hydroxynaphthalene]indigotins**, A., 1249.
- 2-Naphthathiophen-1'-[3'-hydroxynaphthalene]indolignones**, and their derivatives, A., 1249.
- lin*-Naphthatriazole**, 9-*mono*- and 8:9-*di*-bromo-, 8:9-*dichloro*-, and 8:9-*dihydroxy*-, triacetyl derivative, A., 761.
- lin*-Naphtha-1:2:3-triazole**, 4-hydroxy-, A., 762.
- lin*-Naphthatriazole-1-acetic acid**, A., 761.
- lin*-Naphthatriazole-8:9-quinone**, A., 761.
- Naphthazarin**, crystal structure of, A., 571.
and its homologues, degradation of, by ozone, A., 1243.
- Naphthenic acid**, water-insoluble salts, production of solutions of, (P.), B., 511.
soaps from, B., 31.
- Naphthenic acids**, B., 618, 1036.
removal of, from hydrocarbon oils, (P.), B., 1127.
- lin*-Naphthiminazole**, and its 1-acetyl derivative, and 8:9-*dihydroxy*-, triacetyl derivative, A., 761.
- lin*-Naphthiminazole-8:9-quinone**, A., 761.
- 2'-3'-Naphthiminazolone**, and its sodium salt, A., 762.
- Naphthindazoles**, A., 991.
- α -Naphthindazole**, and 9-bromo-, 9-chloro-, and 9-nitro-, and their acetyl derivatives, A., 991.
- β -Naphthindazole**, and its salts and acetyl derivative, A., 991.
- 3-Naphthoamide**, 2-amino-, and its acetyl derivative, A., 762.
- β -Naphthoazide**, A., 77.
- 2-Naphthoazide**, 3-amino-, acetyl derivative, A., 762.
- α -Naphthoflavone** as indicator in bromatometry, A., 1215, 1471.
- 3-Naphthohydrazide**, 2-amino-, and its acetyl derivative, A., 762.
- α -Naphthoic acid**, anæsthetic action of amino-esters of, A., 395.
anilide of, A., 81.
- α -Naphthoic acid**, 8-bromo-, benzanthrone-carboxylic acids from, A., 859.
- 8-halogeno-, synthetic reactions of, A., 618.
- 4-iodo-, A., 1122.
- β -Naphthoic acid**, 3-hydroxy-, manufacture of arylamides of, (P.), B., 14, 1133.
- Naphthoicarylamides**, β -hydroxy-, preparation and properties of, A., 1360.
- β -Naphthoic-fluoranylides** and -3-fluoro-*p*-anisidide, 3-hydroxy-, (P.), B., 1132.
- α -Naphthol**, production of, (P.), B., 14, 348.
nitration of, A., 856.
2-mercurichloride, A., 1139.
mercury ethyl salt, A., 202.
- α -Naphthol**, 8-amino-, production of polyazo-derivatives of, (P.), B., 398.
- 2-bromo-, A., 987.
- 3-bromo-, 3-chloro-, and 3-iodo-, and their 2:4-dibromo-derivatives, and 2-chloro-4-nitro-, A., 77.
- α -Naphthol**, 4-chloro-2-nitro-, 3-bromo-, 3-chloro-, and 3-iodo-2-nitro-4-amino-, and 2-*mono*- and 2:3-*di*-nitro-4-amino-, A., 856.
- 4-fluoro-, A., 856.
- dinitro**-, effect of, on blood-cholesterol, A., 1159.
- 2:4-*dinitro*-, reduction of, A., 856.
- nitroso**-, electrolytic production of, B., 1036.
- 4-nitroso-, preparation of α -naphthaquinone from, A., 863.
- β -Naphthol**, equilibria of, with β -naphthylamine, A., 167, 970.
preparation and properties of aminoazo-derivatives of, A., 1360.
mercurichloride, A., 1139.
- β -Naphthol**, 1:6-*dinitro*-, silver salt, A., 97.
nitroso-, electrolytic production of, B., 1036.
- 1-nitroso-, manufacture of pigments from, (P.), B., 239.
- Naphthols**, electrolytic substitution of, B., 1036.
oxidation of, by peracetic acid, A., 614.
condensation of, with acenaphthenequinone, A., 86.
reaction of, with aromatic carbylamines, A., 485.
- 3:5-*dinitrophenylurethanes*, A., 207.
cotton-substantive, constitution and substantivity of, A., 858.
- α - and β -Naphthols**, equilibrium of, with naphthalene, A., 704.
- o*- β -Naphtholazomandelic acids**, A., 356.
- 1-Naphthol-4-azo- β -naphthol**, 2-nitro-, A., 856.
- α -Naphthol-2:4-dicarboxylic acid**, and its ethyl ester, A., 1237.
- Naphtholdisulphonic acids**, iodo-, manufacture of, (P.), B., 524.
- α -Naphthol-4-sulphonic acid**, production of, from chloronaphthalene, B., 137.
- β -Naphthol-1-sulphonic acid**, production of, B., 138.
reactions of diazosulphonates from, A., 1253.
- β -Naphthol-6- and -7-sulphonic acids**, hydrogen sulphite compounds, action of hydroxylamine on, A., 970.
- 1-Naphthonitrile**, 4-iodo-, A., 1122.
- Naphtho-1':2':3':4'-pyrazole**, and its picrate and acetyl derivative, and 5'-bromo-, 8'-chloro-, and 4'-nitro-, A., 1508.
- Naphthopyrazoles**, A., 1508.
- β -Naphthoxindole derivatives**, synthesis of, A., 501.
- γ -2-Naphthoxybutyric acid**, A., 1242.
- β -2-Naphthoxyethyl *p*-toluenesulphonate**, A., 1242.
- α -Naphthoylacenaphthenes**, A., 1359.
- 2-Naphthoyl-*p*-aminobenzoylacetanilide**, 3-hydroxy-, (P.), B., 14.
- Naphthoylazotriphenylmethanes**, A., 78.
- o*- β -Naphthoylbenzoic acid**, A., 1243.
- α -Naphthoyldiazomethane**, A., 342.
- β -Naphthoyldiazomethane**, 3-hydroxy-, and its acetyl derivative, A., 858.
- 4- α -Naphthoyl-1:7-dimethylindane**, A., 1117.
- α -Naphthoylenediarlyliminazoles**, manufacture of vat dyes from, (P.), B., 1135.
- β -Naphthoylhydrazine**, derivatives of, A., 77.
- β -Naphthoylmenthylamines**, A., 88.
- 4-Naphthoyl-7-methylhydrindenes**, A., 853.
- Naphthoyltriphenylmethanes**, A., 78.
- α -1-Naphthoyl- β -triphenylmethylhydrazine**, A., 78.
- Naphthosultamdisulphonic acid**, hydrolysis of, A., 1360.

- α -Naphthyl esters, Fries reaction with, A., 484.
methyl ether, nitration of, A., 856.
- β -Naphthyl acetate, 3-amino-, acetyl derivative, A., 762.
cholesterylcarbonate, A., 745.
sulphite, sodium derivative, A., 79.
- α - and β -Naphthyl $\gamma\gamma$ -diethoxy-*n*-propyl ethers, A., 846.
- 3-Naphthylacetanilide, 2-hydroxy-, A., 858.
- α -Naphthylacetic acid, synthesis of, A., 81.
- β -Naphthylacetic acid, 3-hydroxy-, and its *p*-nitrobenzeneazo-derivative, A., 858.
- 3-Naphthylacetolactone, 2-hydroxy-. See 5:6-Benzo-2-coumaranone.
- β -1-Naphthylacrylic acids, α -amino-2-hydroxy-, benzoyl derivative, and α -hydroxy-2-hydroxy-, A., 354.
- α -Naphthylamine, 3-bromo-, 3-chloro-, 2-chloro-4-nitro-, 3-iodo- and 4-nitro-, and their derivatives, A., 77.
2-bromo-4-amino-, and 2-bromo-3-nitro-4-amino-, 4-acetyl derivatives, A., 856.
- β -Naphthylamine, equilibria of, with β -naphthol, A., 167, 970.
sulphonation of, (P.), B., 91, 138, 622.
dipyrocatechol borate, (P.), B., 841.
- β -Naphthylamine, 6-nitro-, benzoyl and arsenical derivatives, A., 100.
- Naphthylamines, *p*-bromophenylthiocarbamide, A., 206.
- α - and β -Naphthylamineazopalmit- β -naphthylamides, A., 1232.
- α -Naphthylaminesulphonic acids, separation of, B., 297.
- 2- β -Naphthylamino-7:8-benzacridone-3-carboxylic acid, and its barium salt, A., 992.
- α -Naphthylaminopropionic acid, (P.), B., 262.
- 2-Naphthylarsinic acid, 6-amino-, and its derivatives, and 6-nitro-, A., 100.
- 5- β -Naphthylazochloromercuricarvacrol, A., 1139.
- Naphthylazochloromercurinaphthols, A., 1139.
- 6- β -Naphthylazochloromercurithymol, A., 1139.
- β -Naphthyl-*p*-benzoquinone, A., 86.
- α -Naphthylcarbamie acid, and 5-nitro-, cholesteryl esters, A., 209.
- α - and β -Naphthyl-4'-chlorophenylcarbamide, A., 1118.
- Naphthyl-*N*-*p*-chlorophenylurethanes, A., 998.
- β -Naphthyl 2:4-dimethoxyphenacyl ketone, 1-hydroxy-, A., 91.
- α -Naphthyl dimethylarsine chloride, A., 368.
- Naphthylene-1:2-thiazthiazonium chloride, 4-chloro-, and its derivatives, A., 504.
- α - and β -Naphthyl ethyl ketones, derivatives of, A., 973.
- 2- β -1'-Naphthylethyl-1-methylcyclopentan-2-ol-1-carboxylic acid, methyl ester, and its methylamide, A., 1495.
- 1-(β -1'-Naphthylethyl)-7-methyl-4-*iso*-propylhydriene, 1-hydroxy-, A., 75.
- 3-(β -1'-Naphthylethyl)-4-methyl-7-*iso*-propylindene, A., 75.
- β -1-Naphthylethylpyridinium bromide and perchlorate, β -hydroxy-, A., 1131.
- Naphthylformamidinethiolacetic acids, and their hydrochlorides, A., 365.
- 1-Naphthylglyoxaldi-*p*-methylanil, 2-hydroxy-, A., 485.
- Naphthylideneacetophenone, 2-hydroxy-, A., 1248.
- 2-Naphthylimino-4-ketotetrahydrothiazoles, A., 364.
- α -Naphthylmaleamic acid, A., 491.
- β -Naphthyl *o*-methoxyphenacyl ketone, 1-hydroxy-, A., 91.
- β -Naphthyl *o*-methoxystyryl ketone, 1-hydroxy-, and its derivatives, A., 90.
- 1-Naphthylmethylallylmalonic acid. See α -1-Naphthyl- Δ^8 -pentene- $\beta\beta$ -dicarboxylic acid.
- α -Naphthylmethylarsine, derivatives of, A., 368.
- 2- β -Naphthylmethylcyclohexanone-2-carboxylic acid, ethyl ester, A., 1359.
- Naphthyl methyl ketone, synthesis of, A., 980.
- α -1-Naphthylmethyl- Δ^7 -pentenoic acid, and its lactone, A., 975.
- α - and β -Naphthylmethylphenol, A., 485.
- 1-Naphthylmethyl- Δ^8 -propenylpyridinium bromide, α -hydroxy-, A., 1131.
- β -2-Naphthyl- α -methylpropionic acid, A., 1359.
- α -Naphthylloxamic acid, 4-bromo-, and 4-iodo-, A., 1122.
- α -1-Naphthyl- Δ^8 -pentene- $\beta\beta$ -dicarboxylic acid, and its diethyl ester, A., 975.
- β -Naphthyl phenacyl ketone, 1-hydroxy-, A., 91.
- β -Naphthylquinol, A., 87.
- 1-Naphthylstearic acid, and its derivatives, A., 488.
- 1-Naphthylthiolacetamide, A., 856.
- α -Naphthylthiobiuret, A., 1488.
- ω - β -Naphthyl-*o*-toluic acid, A., 1243.
- β -Naphthyl 3:4:5-trimethoxyphenacyl ketone, 1-hydroxy-, A., 91.
- 2-Naphthyltrimethylammonium chloride, and its reduction by sodium amalgam, A., 76.
- Narceine, 5-bromo-, and its salts and methyl ester, A., 1513.
- Narcosis, A., 893.
theory of, A., 779, 1275.
physical chemistry of blood during, A., 893.
oxygen saturation of blood and respiration during, A., 371.
influence of calcium in, A., 525.
effect of, on water and mineral tolerance in fresh-water animals, A., 779.
avertin, A., 655.
- Narcotics, effect of, on sedimentation of red blood-corpuscles, A., 525.
antagonism of, to thyroxine, A., 1019.
volatile, toxicity of, A., 655.
detection and distribution of, in brain, A., 394.
- Narcotine, synthetic alkaloids from, A., 995.
vitamin-C inactivity of demethylation product of, A., 416.
- Narcotine, 5-bromo-, and its salts, A., 1513.
- Naringoside, A., 906.
- Narsarsukite, X-ray structure of, A., 841.
occurrence of, in Montana, A., 1478.
- Natrolites, natural, reactions of, A., 601.
- "Natto," mucous substance of, B., 122.
- Nebulae, spectrum and composition of, A., 424.
redward shift of spectral lines of, A., 424.
- Necator americanus*, anthelmintic action of phenols against, A., 1412.
- Necrobia rufipes*, attraction of, to coconut oil, copra, etc., B., 691.
- Necrosis, myocardial, induced by orthophosphates, A., 658.
- Nectria galligena*, control of, B., 1013.
- Needles, surgical, nickel alloy for, (P.), B., 107.
- Needle ironstone, A., 946.
- Nematodes, control of, by sub-surface treatment of soils with carbon disulphide and chloropicrin, B., 965.
eradication of, in greenhouse soils, B., 422.
- Nembutal, effect of, on serum-cholesterol in dogs, A., 1411.
- Neocyanine, A., 992.
- Neodymium, half-life of, A., 1185.
chromospheric emission due to, A., 1046.
arc spectrum of, A., 556.
electric furnace ionisation effect with, A., 3.
- Neodymium alloys, magnetic, A., 159.
- Neodymium chloride, density of aqueous solutions of, A., 1201.
nitrate, solubility of, A., 1457.
oxide, spectrum of vapour of, A., 1299.
sesquioxide, cubic, A., 686.
- Neo- β -hydroxycarotene, A., 340.
- Neon atoms, energy exchange of, with walls, A., 912.
isotopes, A., 6.
masses of, A., 5.
relative abundance of, A., 5.
apparatus for separation of, A., 189.
in ocean water, A., 724.
in spectrum of B stars, A., 800.
spectrum of, A., 136, 271.
isotope effect in, A., 136.
intensity and width of lines in, A., 907.
reversal of lines in, A., 555.
conductivity of, A., 566.
critical potential of, A., 273.
starting potential of glow discharge in mixtures of argon and, A., 1.
collisions of second kind between magnesium and, A., 274.
ionisation of, by magnesium ions, A., 1294.
disintegration of, by neutrons, A., 277, 1297.
- excitation function of metastable level of, A., 675.
scattering of polonium α -particles by, A., 1048.
vapour pressure of, at liquid hydrogen temperatures, A., 691.
viscosity of binary mixtures of hydrogen, helium, and, A., 438.
dynamics of crystal lattices of, A., 686.
luminescence of mercury shaken in, A., 147.
moving striations in, A., 1.
velocity of sound in, A., 155.
detection of, in helium, spectrochemically, A., 1215.
- Neoplasma, glycogen in, A., 1397.
benign and malignant, constitution of fat in, A., 1264.
- Neosalvarsan (*nearsphenamine*), constitution of, A., 100.
physical properties of, B., 174.
arsenoxide in relation to toxicity of, A., 531.
effect of, on galactose assimilation, A., 781.
- Nephrectomy, partial, renal insufficiency produced by, A., 237.
- Nephritis, concentration and dilution tests in, A., 885.
secretion of ammonia in, A., 650.
ammonia content of brain in, A., 387.
increased blood-pressure in, A., 1402.
effect of lowered blood-pressure on kidney efficiency in, A., 887.
glycogen in organs in, A., 518.
hyperglycemia in, A., 1010.
indicanemia in, A., 1527.

- Nephritis**, nitrogen and sulphur metabolism in, A., 237, 650.
 oxalic acid metabolism in, A., 1269.
 phosphorus, sodium, and nitrogen exchange in blood in, A., 108.
 formation of urea from glycine in, A., 1010.
 composition of urine in, A., 518.
 acute, azotaemia in, A., 1400.
 cantharidine, ammoniophanæresis in, A., 895.
 toxic, after exposure to carbon tetrachloride and smoke fumes, A., 895.
 uranium, effect of insulin on acidosis in, A., 781.
 renal origin of albuminuria in, A., 247.
 amino-acid, ammonia, and organic acid excretion in, A., 247.
 diazo-values of blood and urine in, A., 650.
 effect of insulin on, A., 650.
 sugar metabolism in, A., 650.
 uranium nitrate, reversibility of acidosis in, A., 531.
Nephrohormone, effect of, on blood-calcium, A., 538.
 regulation of chlorides in blood and urine by, A., 538.
Nephromopsis acid, and its methyl ester, A., 863.
Nephromopsis endocrocea, constituents of thalli of, A., 1238.
Nephromopsis Stracheyi, constituents of, A., 863.
Nephrosis, effect of hypercholesterolemia on thyroid tolerance in, A., 1149.
Neptal, influence of, on tissue cultures, A., 1413.
Nerioderein, A., 1180.
Neriodorin, A., 1180.
Nerium odorum, constituents of bark of, A., 1180.
Nernst theorem, A., 290.
 as a third law of thermodynamics, A., 1323.
"Neroli water-oils," B., 124.
Nerves, physico-chemical theory of excitation and inhibition of, A., 1414.
 transmission of impulses from, A., 115.
 acetylcholine as transmitter of impulses from, A., 244.
 X-ray diffraction of, A., 231.
 lipins in X-ray patterns of, A., 1145.
 production of heat by, A., 779.
 effect of quaternary ammonium salts on action currents in, A., 1412.
 solvation and desolvation of, A., 1145.
 influence of blood-constituents on oxygen consumption in, A., 1405.
 effect of electrolytes on respiration in, A., 1405.
 effect of calcium and potassium chlorides on respiratory metabolism of, A., 652.
 spectrography of biochemical reactions of, A., 1003.
 cardiac depressor from dorsal root stimulation of, A., 396.
 fatigue in preparations of muscle and, A., 782.
 medullated, action of arsenites on, A., 1412.
 peripheral, stimulation of, by injection of neutral solutions, A., 530.
 sympathetic, colloid-chemical transmission of stimuli to, A., 1539.
Nerve cells, cresyl-violet for staining of, A., 1146.
 incinerated, cyto-chemistry of, A., 231.
Nervous diseases, blood-manganese in, A., 517.
Nervous system, composition of parts of, A., 1520.
 acetylcholine in, A., 376.
 animal and human, potassium content of, A., 1145.
 central, adenylic acid on, A., 1005.
 human embryonic, glycogen content of, A., 1397.
Nets, fishing, preservation of, (P.), B., 304.
 preservatives for, B., 1038.
Nettles, of U.S.S.R., composition and feeding value of, B., 1061.
Nettolin, effect of, on potato scab, B., 869.
Neuritis, retrobulbar, from thallium poisoning, A., 1160.
Neuropsychiatric disease, calcium content of cerebrospinal fluid and blood-serum in, A., 1402.
Neurospora sitophila and *tetrasperma*, serologically-active carbohydrates from, A., 786.
Neurospora tetrasperma, heat-activation of germination of ascospores of, A., 1540.
Neurosyphilis, colloidal carbon flocculation test in, A., 1402.
Neutret, excitation and disintegration of protons and, A., 1442.
Neutrino, existence of, A., 276.
 wave theory of, A., 143.
 mass of, A., 143, 804.
 effective cross-section of, A., 911.
 with magnetic moment, ionisation power of, A., 426.
 detection of, A., 426, 911.
Neutrons, A., 1295.
 theory of, A., 1439.
 positrons and, A., 276.
 mass of, A., 143, 1295, 1441.
 layers of, in atomic nuclei, A., 142.
 levels of, A., 1049.
 emission of, A., 1440.
 by beryllium and radon, A., 1296.
 by radio-elements, A., 802.
 by radioactive sources, A., 1440.
 from targets bombarded by high-energy deuterons, A., 1296.
 attempted detection of spontaneous emission of, A., 426.
 secondary emission from elements bombarded with, A., 7.
 effective collision radius of, A., 7.
 collisions between deuterons and, A., 802.
 slowing down of, by collisions with hydrogen nuclei, A., 426.
 collision of, with protons, A., 1440.
 slowing-down of, by protons, A., 802.
 stability of protons and, A., 278.
 action of, with protons, A., 142, 911, 1049, 1297.
 distribution-in-angle of protons projected by, A., 1296.
 energy of, and Fermi effect, A., 1296.
 slowing down of, in substances containing hydrogen, A., 1186.
 loss of velocity of, in heavy water, A., 678.
 passage of, through matter, A., 1186.
 interaction of, with matter, A., 1186.
 disintegration of, by neon, A., 1297.
 scattering of, by lead and water, A., 1296.
 by protons, A., 677, 1440.
 transmutation of elements by, A., 7.
 disintegration of light atoms by, A., 277.
 disintegration of boron by, A., 1297.
 disintegration of gold by, A., 1297.
 production of radioactivity by, A., 678, 910.
 radioactivity induced by, A., 142, 558.
 β -radioactivity of, A., 1441.
Neutrons, particles of two, A., 1049.
 in natural system of elements, A., 679.
 from beryllium-radon, A., 142.
 from deuterons, mass of, A., 276.
 electrostatic, models of, A., 1441.
 high-energy, production of, from cosmic-ray bursts in aluminium, A., 1442.
 of high velocity, A., 7.
 slow, A., 1441.
 cross-section of heavy nuclei for, A., 1296.
 capture of, by atomic nuclei, A., 426, 1049.
 velocity of, A., 802, 1186, 1441.
 γ -rays from, A., 141, 1296.
 absorption of, A., 910, 1049.
 γ -rays due to, A., 1441.
 canalisation of, A., 426.
 scattering of, A., 1441.
 by hydrogen, A., 1296.
 disintegration by, A., 277.
 disintegration of lithium by, A., 1296.
Nickel, at. wt. and isotopes of, A., 802.
 nuclear evolution of cobalt, iron, and, A., 1442.
 electrolytic production of, (P.), B., 270, 315.
 electrolytic production and refining of, B., 413.
 extraction of, from lateritic iron ores, (P.), B., 1147.
 purification of, (P.), B., 999.
 refining of, (P.), B., 155.
 effect of quenching on length of, B., 1049.
 non-weldability of, B., 594.
 and its salts, wave-lengths of L lines in X-ray spectra of, A., 1293.
 induced radioactivity of, A., 1297.
 dispersion of X-rays by, A., 686, 1307.
 X-ray intensity in thick targets of, A., 1438.
 electrodeposition of, from chloride solutions, B., 1147.
 effect of oxidising agents on, A., 1467.
 specification for cathodic deposits of, B., 905.
 prevention of porosity in electrodeposits of, B., 595.
 electroplating with, B., 637.
 standards for, B., 772.
 alkaline baths for, B., 502.
 dissolving of anodes in, B., 1147.
 analysis of salts for, B., 802.
 inorganic salts for adding to baths for, B., 998.
 of aluminium, B., 105, 1147.
 of automobile parts, B., 233.
 determination of nickel and chlorides in, B., 192.
 and chromium, (P.), B., 909.
 electronic energy of, A., 909.
 ionisation of hydrogen over, A., 1068.
 properties of, at Curie point, A., 153.
 variation in resistance of, at Curie point, A., 435.
 and its alloys, magnetic properties of, A., 1063.
 magnetic properties of, near Curie point, A., 435.
 magnetic properties of thin films of, A., 287.
 effect of longitudinal magnetic fields on, A., 1312.
 magneto-resistance of, A., 18.
 with alternating current, A., 567.
 thermal energy change in magnetisation of, A., 572.
 ferromagnetic permeability of, A., 435.
 thermal expansion and ferromagnetic change in volume of, A., 153, 287.

Nickel, paramagnetism of, A., 153.
 effect of alloyed metals on, A., 1063.
 atomic heat of, A., 924.
 at liquid helium temperatures, A., 574.
 true specific heat of, A., 20.
 thermionic work function of, A., 1293.
 adsorption by, of ethylene, A., 441.
 of hydrogen, A., 27, 293.
 of light and heavy hydrogen, A., 27.
 crystals, magnetised, powder diagrams of, A., 1307.
 effect of heating on catalytic and pyrophoric properties of, A., 1329.
 effect of ferromagnetic transformation on catalytic effect of, on decomposition of carbon monoxide, A., 1467.
 catalysis of ortho-para conversion of hydrogen by, A., 1329.
 and its alloys with copper, corrosion of, by washing and bleaching agents, B., 27.
 oxidisability of, A., 1328.
 negative hysteresis in, A., 1452.
 testing of coatings of, B., 192.
 improvement of sprayed coatings of, B., 996.
 precipitation of, by magnesium, and formation of its basic sulphate, A., 716.
 influence of, on brass and bronze, B., 770.
 substitution of, for cobalt in pressed hard alloys, B., 105.
 industrial uses of, B., 458.
 and its alloys, in petroleum refining, B., 886, 1098.
 manufacture of anodes of, (P.), B., 107.
 production of cathodes of, (P.), B., 506.
 cast, crystallite orientation in, A., 919.
 catalytic, transformations of hydrogen on, A., 710.
 See also under Catalysts.
 electrodeposited, structure and properties of, B., 998.
 finely-divided, preparation of, A., 941.
 heated, emission of hydrogen from, A., 1313.
 oxide-coated, effect of impurities on thermionic emission from, A., 909.
 quadricovalent, planar configuration for, A., 684.
Nickel alloys, magnetic properties of, A., 1199.
 use of, in architecture, B., 1097.
 for aircraft, B., 272.
 for use in manufacture of paper and pulp, B., 446.
 for surgical needles, (P.), B., 107.
 corrosion-resistant, (P.), B., 273.
Nickel alloys, with aluminium, A., 158.
 heat-resisting, (P.), B., 638.
 with aluminium and copper, wrought, B., 594.
 with aluminium and iron, magnetic, (P.), B., 504, 857.
 for permanent magnets, (P.), B., 810.
 analysis of, B., 771.
 with aluminium and magnesium, B., 808.
 with barium, B., 232.
 manufacture of, (P.), B., 236.
 with beryllium, A., 926.
 with chromium, electroplating with, (P.), B., 274.
 uses of, B., 361.
 for electrical resistances, B., 1049.
 with chromium and iron, austenitic, acceleration of tempering of, B., 994.
 corrosion-resistant, (P.), B., 907.
 with chromium, iron, and carbon, mechanical properties of, A., 23.
 with cobalt, A., 1065.

Nickel alloys, with cobalt and iron, (P.), B., 235.
 for sealing into glass, (P.), B., 106.
 with cobalt, iron, and titanium, for permanent magnets, (P.), B., 810.
 with copper, optical constants of, A., 1065.
 diffusion in, A., 23.
 with copper and iron, A., 926.
 electrodeposition of, A., 175.
 with copper, iron, and manganese, A., 927.
 with copper and silicon, age-hardening of, B., 152, 952.
 with copper, tin, and iron, B., 27.
 with copper and zinc, electrodeposition of, B., 554.
 with iron, X-ray structure of, A., 1199.
 lattice distortion in, A., 919.
 manufacture of, (P.), B., 235.
 irreversibility of, A., 1456.
 rolling and recrystallisation texture of, B., 855.
 in relation to magnetic properties, B., 855.
 electrodeposition of, B., 413, 905; (P.), B., 858.
 solution of electrodeposits of, A., 1199.
 electroplating with, B., 729.
 electrical properties of wires of, A., 815.
 magnetisation of, A., 813.
 ferromagnetism of, A., 19.
 elastic constants of, on magnetisation, A., 816.
 electrical insulation of magnetic bodies of, (P.), B., 108.
 separation of crystals of, A., 287.
 for turbine blades, (P.), B., 314.
 cold-rolled, magnetic behaviour of, due to separation-hardening, B., 905.
 magnetic, (P.), B., 556, 956.
 manufacture of, (P.), B., 235.
 with iron and molybdenum, A., 23.
 with iron and tungsten, hardening of, by heat, B., 360.
 with manganese, A., 576.
 with mercury and zinc, A., 23.
Nickel compounds, effect of oxidising agents on solutions of, A., 45.
Nickel salts, colour of, in hydrobromic acid solution, A., 582.
 simultaneous discharge of hydrogen ions and nickel ions from solutions of, A., 1330.
 physiological action of, A., 781.
Nickel chloride, emission band spectrum of, A., 1051.
 electrolysis of, in aqueous-ethyl alcoholic solutions, A., 1086.
 equilibrium of, with hydrochloric acid and water, A., 935.
 fluoride, magnetic susceptibility of, A., 436.
 halides, thermal properties of, A., 574.
 hydride, band spectrum of, A., 561.
 nitrate, effect of hydrogen peroxide on electrolysis of solutions of, A., 45.
 nitrites, mixed, A., 717.
 sesquioxide, photo-electric distribution curve for, A., 682.
 pyrophosphate, addition of hydrazine to, A., 717.
 sulphate, equilibrium of, with sulphuric acid and water, A., 1461.
 action of magnesium on solutions of, A., 52.
 hydrate, dissociation pressure of, A., 302.

Nickel sulphates, anhydrous, hydrated, and double, magnetic susceptibilities of, A., 14.
 sulphide, velocity of solution of, in hydrochloric acid, A., 1208.
 precipitated, composition and properties of, A., 1471.
Nickel organic compounds, with thiosemicarbazide, A., 202.
 containing amide and imide groups, magnetic susceptibility of, A., 923.
 complex, diamagnetic, planar configuration of, A., 980.
Nickel carbonyl, structure of, A., 284.
 parachor and structure of, A., 432.
 manufacture of, (P.), B., 803.
 production and purification of, (P.), B., 544.
 purification of, (P.), B., 900.
 decomposition of, A., 308.
 thermal decomposition and oxidation of, A., 40.
 gaseous, reactivity of, A., 941.
 dibenzoinoxime diacetate, A., 981.
 phthalocyanine, mol. wt. of, A., 689.
Nickel detection, determination, and separation :—
 detection of, in hydrogenated fats, B., 508.
 detection and determination of, in presence of copper by means of dimethylglyoxime, A., 951.
 determination of, electrolytically, with iron electrodes, A., 597.
 volumetrically, A., 56, 1339.
 in alloys, by titration of its oxime, A., 187.
 in iron alloys, B., 499.
 in presence of iron salts and phosphoric acid, A., 1339.
 in complex salts, A., 319.
 in zinc ores and electrolytic zinc, B., 1146.
 determination in, of zinc, B., 771.
 separation of, from aluminium, A., 1338.
 from cobalt, A., 951.
 from copper with alkali phosphates, A., 187.
Nickel ores, containing copper, treatment of, at Falconbridge, B., 770.
 Canadian, treatment of, B., 312.
 with diabase in Nassau, A., 842.
 oxidised, reduction of, (P.), B., 505.
 Sudbury, life-history of, A., 602.
Nickel silver, physical and casting properties of, B., 905.
Nickel wires, negative Matteucci effect in, A., 1452.
 creep of, B., 310.
 adsorption of dyes on, A., 929.
 strained, Becker's theory of magnetisation of, A., 1452.
Nickelin, potentiometric quantitative analysis of, B., 730.
Nicotiethylamide, β -bromo-, A., 1504.
Nicotiana, constituents of species of, A., 1549.
Nicotiana glauca, anabasine in, A., 905.
Nicotiana rustica, B., 1164.
 dry distillation of, B., 1164.
 use of dust from, B., 1164.
 influence of fertilisers on nicotine content of, B., 1158.
 harvesting time for, B., 1158.
 citric acid content of, A., 1550.
 production of citric acid from, B., 1164.
 resin from, A., 1550.
 determination in, of citric acid, B., 1164.
 of moisture, B., 1164.
 See also Makhorka.

Nicotiana tabacum, mineral and organic constituents of, A., 1431.

Nicotinamide from co-enzyme preparations, A., 400.

Nicotine, Pictet's synthesis of, A., 635, 872, 995, 1136, 1256.
resins formed in production of, B., 1117.
recovery of, from tobacco, (P.), B., 430.
effect of electrolysis on, A., 1387.
absorption of, from tobacco smoke, B., 1117.
solid adsorbents for, in air streams, B., 45.
vapour pressure of, A., 22.
dehydrogenation of, A., 1513.
flavinate, A., 639.
salts of 2:4-dinitrophenol and, (P.), B., 381.
in cigarette ends, B., 924.
in cigarette smoke, B., 174.
in raw tobacco, B., 174.
decomposition of, in tobacco plants, A., 133.
insecticides from, (P.), B., 692.
spreader for, B., 969.
control of codling-moths with, B., 326.
preparations, control of codling-moths with, B., 742.
toxicity of, to lepidopterous pests on truck crops, B., 778.
pharmacological assay of, A., 119.
cardiac effect of, A., 1155.
detoxication of, with caseinogen, A., 397.
fate of, in fresh minced liver, A., 1015.
content of, in milk from women smoking, A., 118.
uptake of, by the human organism, during smoking, A., 656.
identification of, microchemically, A., 1141.
determination of, nephelometrically, B., 782.
by silicotungstic acid method, A., 102.
in cigar and maxorochni tobacco, B., 1118.
in tobacco, A., 133.
and of alkaloids accompanying it, A., 133.
determination in, of pyridine, A., 1516.

Nicotinic acid flavinate, A., 639.

Nicotinylacetylmethane, and its hydrochloride, A., 499.

Nicotinylacetylmethanes, preparation, alcoholysis, and hydrogenolysis of, A., 499.

Nicotinylbenzoylmethane, and its hydrochloride, A., 499.

Nicotinyl-*n*-hexoylmethane, and its hydrochloride, A., 499.

Nicotinyltrimethylacetylmethane, and its hydrochloride, A., 499.

Nicotinyl-2:4:6-trimethylbenzoylmethane, and its hydrochloride, A., 499.

Nicotinylvalerylmethanes, and their hydrochlorides, A., 499.

Nicotylacetic acid, and oximino-, ethyl esters, A., 1381.

Nicotyrine in tobacco, A., 422.

Niemann-Pick disease, phosphatides of brain and liver in, A., 1265.

Niger oil, B., 732.

Ninhydrin, compound of, with indoxyl, A., 648.
use of, in determination of polypeptides, A., 1390.

Niobium, B., 1146.
hyperfine structure and nuclear moment of, A., 137.
nuclear moments of, A., 2.
spectrum of, A., 137, 907.
X-ray emission spectrum of, A., 3.

Niobium, oxygen content and potential of valve layers of, A., 430.
electrodeposition of, A., 711.
temperature scale of, A., 1312.

Niobium alloys, with ferrosilicon, production of, (P.), B., 1147.

Niobium carbide, demonstration of superconductivity of, A., 189.
pentachloride, action of, on organic compounds, A., 73.
pentoxide, analysis of mixtures of, with tantalum pentoxide, A., 1096.

Niobium determination :—
analysis of, A., 838, 1217.
determination of, volumetrically, A., 721.

Nipagin, biological experiments with, A., 1412.

Nipazol, biological experiments with, A., 1412.

Nitella, penetration of potassium into, A., 1289.
restoration of potassium effect in, A., 1038, 1289.

Nitrates. See under Nitrogen.

Nitration, A., 1103, 1487.
function of sulphuric acid in, A., 967.
determination of organic material in baths for, A., 638.

4-Nitratomercuri-2-nitroanisole, A., 997.

Nitric acid. See under Nitrogen.

Nitric oxide. See Nitrogen dioxide.

Nitrides, crystal structure of, A., 17.

Nitriles, formation of, by dehydration of amides, A., 72.
infra-red absorption spectra of, A., 914.
condensation products of, with aromatic nitro-compounds, (P.), B., 183.
aliphatic, dipole moments of, A., 809.
aromatic, formation of, A., 1121.
ethylenic, A., 610, 1228.
 α -ethylenic, ultra-violet absorption spectra of, A., 1299.
 $\alpha\beta$ -ethylenic, reaction of, with hydrogen peroxide, A., 212.

Nitrile groups, influence of, on allylic intramolecular transpositions, A., 63.

Nitrites. See under Nitrogen.

Nitro-aldehydes, aromatic, condensation of, with cotarnine, A., 1513.

Nitroamide, catalytic decomposition of, A., 1466.

Nitrochalk, physical properties of, B., 99.

Nitro-compounds, relation between acidity and tautomerism in, A., 334.
Friedel-Crafts reaction with, A., 867.
reduction of, A., 482, 1113.
chemotherapeutic testing of, A., 246.
aliphatic, A., 470.
aromatic, purification of, (P.), B., 396.
complexes of, with acids, A., 1077.
condensation products of, with nitriles, (P.), B., 183.
toxicity of, A., 1159.
identification of, by optical crystallographic methods, A., 102.
organic, electrolytic reduction of, in concentrated aqueous salt solutions, B., 984.
identification of, A., 877.

diNitro-compounds as indicators, A., 717.

polyNitro-compounds, complexes of, A., 828, 1132.

Nitrocotton. See Cellulose nitrate.

Nitro-effect, biological, A., 256.

Nitrogen atoms, asymmetric, A., 202.
at. wt. of, A., 425.
nucleus, emission of *H*-rays by, excited by polonium α -rays, A., 910.
nuclear transformation of, by fast α -rays, A., 426.

Nitrogen, existence of isotope N^{16} of, A., 277.
molecules, collisions of electrons with, A., 801.
metastable, absorption spectrum of, A., 1045.
in natural gases, A., 724.
manufacture of, use of corrosion-resistant steel in plant for, B., 458.
and hydrogen, from hydrocarbons, (P.), B., 215.
from natural gas, (P.), B., 439.
purification of mixtures of hydrogen and, with copper-ammonia solutions, (P.), B., 803.
spectrum of, A., 1, 271.
excitation of, A., 799.
Swan system in, A., 1183.
discontinuities in absorption spectrum of, A., 136.
afterglow spectrum of, A., 907.
action of hydrogen bromide on afterglow of, A., 1437.
atomic spectrum of, A., 555.
band spectrum of, A., 1, 271, 423, 675, 907, 1291, 1437.
Stark effect in molecular spectrum of, A., 675, 1291.
phosphorescence spectrum of, A., 1045.
rotation temperature of negative glow in, A., 799.
ultra-violet wave-length standards for, A., 799.

Végar-Kaplan bands in mixtures of argon and, A., 1045.
induced radioactivity of, A., 803.
bombardment of, by deuterons, A., 559.
scattering of electrons by, A., 274.
ejection of protons from, by action of α -rays, A., 911.
disintegration of, A., 802.
by neutrons, A., 7, 277.
by neutrons from beryllium, A., 7.
electrolytic introduction of, through glass, A., 705.
electronic states of, and their energies of dissociation, A., 144.
effect of glow discharge on striking potential in, A., 907.
ionisation potential of, A., 1047.
potential curve of, A., 1448.
ionisation of, by electron impact, A., 1305.
spectrum analysis of products of, A., 5.
speed of positive ions in, A., 5.
electrical clean-up of, at low pressures, A., 4.
Joule-Thomson coefficient for, A., 1313.
Kerr effect in, A., 1192.
heat capacity of, at high pressures and temperatures, A., 437.
melting parameter of, A., 156.
liquid, electric birefringence of, A., 917.
viscosity of, A., 1064.
solid, luminescence from, A., 914.
sublimation pressure of, A., 1064.
lattice dynamics of crystals of, A., 811.
measurement of small volumes of, in micro-Dumas method, A., 948.
energy of dissociation of, A., 590.
and its mixtures with oxygen, inner friction of, in a magnetic field, A., 926.
diffusion of, in iron and steel, A., 692.
solubility of, in iron, A., 577.
solubility of mixtures of hydrogen and, in water, A., 1200.
equilibrium of mixtures of, with oxygen, A., 695.
explosion of mixtures of, with hydrogen and oxygen, A., 1080.

Nitrogen, oxidation of, A., 592.
 influence of light on reaction of, with hydrogen, A., 457.
 action of, on metals in low-pressure electric discharge, A., 1089.
 fixation of, by bacteria, A., 1167; B., 1009.
 solubility of, in blood-corpuscles, A., 229.
 catabolism of, in invertebrates, A., 388.
 active, production of, A., 176.
 reactions of, A., 945, 1213.
 ammoniacal, magnetic rotation of, A., 568.
 atmospheric, fixation of, by Manchu soya beans, A., 1414.
 combined, origin of, in air, A., 953.
 tervalent, stereochemistry of, A., 92.
Nitrogen compounds, electronic structure and properties of, A., 432.
 manufacture of, from hydrocarbon oils, (P.), B., 345.
Nitrogen hydrides, and their derivatives, in liquid ammonia, A., 35.
 iodide, detonation of, A., 828.
 triiodide, reaction of, with acids and alcohols in presence of olefines, A., 729.
Nitrogen monoxide (nitrous oxide), purification of, (P.), B., 544.
 absorption spectrum and photochemical decomposition of, A., 1051.
 Raman spectrum of, A., 145.
 rotational Raman effect in, A., 281.
 fluorescent radiation from, A., 12.
 dissociation of, in glow discharge, A., 46.
 photodissociation of, A., 1331.
 photochemical decomposition of, A., 590.
 liquid and solid, specific heat, entropy, and vapour pressure of, A., 924.
 oxide catalysts for decomposition of, A., 1467.
 effect of oxygen on reaction of, with hydrogen, A., 40.
 action of, with hydrogen on platinum, A., 829.
 with methyl alcohol, A., 172.
 oxidation by, A., 1085, 1213.
 of carbon monoxide, A., 307.
monoxide and dioxide, formation of negative ions in, A., 140.
dioxide (nitric oxide), electrothermal synthesis of, A., 176.
 action of electric discharge on, A., 176.
 ionisation of, by electron impact, A., 1305.
 magnetic moment of, A., 679.
 specific heat, entropy, and free energy of, A., 21.
 solid, paramagnetism of, A., 814.
 adsorption of, by glass walls, A., 441.
 explosions of mixtures of, with carbon disulphide, A., 1081.
 oxidation of, at low pressure, A., 593.
 reduction of, by oxidising enzymes, A., 248.
 reaction of, with water vapour, A., 715.
 determination of, in coke-oven gas, B., 341.
trioxide, A., 457.
 determination of, in nitrosylsulphuric acid, B., 492.
per- or tetra-oxide, molecular shape of, A., 1056.
 phosphorescence of, A., 1051.
 dissociation of, A., 165.
 cryoscopy of mixtures of, with bromine, A., 934.
pentoxide, Raman spectrum of, A., 1445.
 Raman spectra of mixtures of nitric acid and, A., 564.

Nitrogen pentoxide, equilibrium of, with lithium oxide and water, A., 583, 1461.
 blue flame in heated mixtures of ozone and, A., 593.
 oxides, A., 824.
 absorption of, (P.), B., 1142.
 from oxygen or air, (P.), B., 673.
 by sulphuric acid, A., 308, 1208.
 influence of gas velocity on, B., 402.
 velocity of adsorption of, by glass, A., 587.
 explosions of, with combustible gases, A., 1081.
 peroxidation of, in presence of ozone, A., 460.
 reactions of, with atomic nitrogen and oxygen, A., 1206.
 inversion of sodium nitrito by, A., 452.
 toxicity of, A., 1534.
 removal of, from town's gas, B., 1124.
 determination of, photo-electric cell for, A., 465.
 other than the monoxide, determination of, B., 766.
 selenide, A., 181.
 trioxylfluoride, A., 181.
Nitric acid, production of, (P.), B., 452, 1092.
 from ammonia, A., 43; (P.), B., 269.
 concentration of, (P.), B., 21.
 Raman effect in mixtures of sulphuric acid and, A., 281, 807.
 oxidation potentials of solutions of, A., 450.
 heat of formation of, A., 168.
 heat of dilution of, A., 1324.
 potential oscillations of iron in, A., 1325.
 fluorination of, A., 715.
 reactivity and constitution of, A., 564, 710.
 corrosion of welds in stainless steel by, B., 594.
 aluminium vessels for transport and storage of, B., 501.
 plant materials resistant to, B., 990.
 stopper for bottles containing, A., 840.
 fuming, action of, on various elements, A., 715.
 determination of, colorimetrically, A., 1092.
Nitrates in Baltic sea-water, A., 1343.
 synthesis of, at ultra-pressures, A., 593.
 manufacture of, (P.), B., 629.
 by oxidation of ammonia, (P.), B., 306.
 absorption spectra and photo-dissociation of, A., 10.
 photo-dissociation of single crystals of, in polarised light, A., 1331.
 electrolysis of mixtures of propionates and, A., 472.
 decomposition pressures of, A., 1204.
 destruction of nitrites and carbonates in, B., 1141.
 in animal tissues, and their fate on ingestion, A., 525.
 Chili, salt systems of, B., 848.
 fused, magnetic double refraction and light scattering in, A., 1448.
 detection of, A., 948; B., 225.
 in milk, B., 1019.
 determination of, A., 595.
 colorimetrically, A., 1092.
 in meat, B., 604.
 in meat and meat products, B., 1020.
 in water, colorimetrically, A., 1337.
Nitrous acid, oxidation of, by chloric and bromic acids, A., 173.

Nitrogen:—

Nitrous acid, action of hydrogen peroxide on, A., 1213.
Nitrites in Baltic sea-water, A., 1343.
 absorption spectra and photo-dissociation of, A., 10.
 Raman spectrum of, A., 145.
 oxidation of, by X-rays, A., 943.
 action of, on intestines, A., 1534.
 detection of, A., 316; B., 225.
 with Magdala-red, A., 463.
 in urine, A., 513.
 determination of, volumetrically, A., 1337.
 in meat and meat products, B., 1020.
 in pickling salts, B., 304.
Hyponitrous acid, formation of, in biological oxidation of ammonia, A., 787.
Pernitrous acid, A., 1213.
Nitrogen organic compounds, structure and oxidation of, A., 1516.
 manufacture of, (P.), B., 348, 622, 841.
 absorption spectra of, A., 913.
 with titanium tetrachloride, A., 180.
 trisubstituted, resolution of, A., 1118.
Nitric acid, esters, decomposition of, at low temperatures, A., 829.
Nitrates, organic, thermal analysis of binary mixtures of, A., 302, 959.
Nitrogen detection and determination:—
 detection of, in organic compounds, A., 876.
 determination of, A., 1435.
 prevention of frothing in Arndt's method of, A., 1476.
 by Kjeldahl method, indicator for, A., 639.
 reduction of digestion time in, A., 876.
 using selenium, A., 595, 836.
 boric acid solutions for, A., 53.
 by rapid Kjeldahl method, A., 1258.
 by Kjeldahl-Nessler method, A., 53.
 by modified Kjeldahl-Pregl method, B., 331.
 by oxidation with sulphuric acid, catalytic effect of selenium and tellurium in, A., 596.
 photometrically, A., 134.
 in cereals, microchemically, B., 250.
 in coal and coke, B., 5.
 in ferrochromium and corrosion- and heat-resisting steels, B., 64.
 in flour mill products, B., 330.
 in cultures of micro-organisms, A., 899.
 in organic compounds, by modified Kjeldahl method, A., 1140.
 in plants, B., 919.
 in soils, B., 514, 820, 1009, 1108.
 in steel, B., 995.
 amino-, determination of, by alcohol and formaldehyde titrations, A., 170.
 by formaldehyde titration, B., 779.
 in presence of tannin, A., 422.
 ammonia- and urea-, determination of, A., 1092.
 polypeptide, residual and total, determination of, by Nessler colorimetry, A., 1044.
 total, determination of, in organic compounds, microchemically, A., 1140.
Nitrogen ions, mobility of, in nitrogen, A., 909.
polyNitro-hydrocarbons, compounds of, with 1-keto-1:2:3:4-tetrahydrocarbazole, A., 1132.
Nitrones, A., 1494.
Nitronic acids, constitution of, A., 334.

- Nitrophenols**, action of, on respiration, A., 405.
- o*-Nitrophenols**, ring-fission of, by sulphuric acid, A., 484, 1360.
determination of, microvolumetrically, A., 1141.
- di*Nitrophenols**, reduction of, by redox indicators and enzymes, A., 401.
- Nitrophoska**, phosphate efficiency of phosphate fertilisers and, B., 325.
lime-bearing, nutrient ratio for, B., 1109.
determination in, of phosphoric acid, B., 1001.
- Nitroprussic acid**, sodium salt, use of, in differentiation of paratyphoid bacilli, A., 536.
- Nitroso-compounds**, A., 1481.
- Nitrosyl perchlorate**, Raman spectrum of, A., 1190.
chloride, decomposition of, (P.), B., 948.
thermal decomposition of, A., 708.
action of, on Schiff's bases, A., 750.
on silver salts, A., 1212.
- radical**, A., 1056.
- Nitrosylsulphuric acid**, denitration of, B., 20.
action of, on Schiff's bases, A., 750.
corrosion of lead by, B., 722.
determination in, of nitrogen trioxide, B., 492.
- Nitrous acid**. See under Nitrogen.
- Nitrous oxide**. See Nitrogen monoxide.
- Nitroxyfluoride**, A., 715.
- Nit-schia closterium* and *palea***, photosynthesis in, A., 1166.
- n*-Nonadecylmalonic acid**, A., 64.
- Δ^6 -Nonadienal**, synthesis of, A., 67.
- Δ^8 -Nonadienol**, A., 67.
- Nonaldehyde *m*-nitrobenzhydrazide**, A., 743.
- p*-nitrobenzoylhydrazone**, A., 1259.
- o*-tolylsemicarbazone**, A., 1259.
- Nonanaphthene**, in Oklahoma petroleum, B., 293.
- Non-electrolytes**, solubility of, A., 441.
ionic reactions in aqueous solutions of, A., 1327.
viscosity of dilute solutions of, A., 1317.
- Δ^7 -Noninene**, α -bromo-, A., 470.
- Δ^7 -Noninen- α -ol**, urethane of, A., 470.
- Nonodilactone**, θ -hydroxy-, A., 1351.
- Nonolactone**, θ -hydroxy-, A., 1351.
- Nonotrilactone**, θ -hydroxy-, A., 1351.
- Nontronite**, hydrothermal synthesis of, A., 1333.
relation of, to montmorillonite, A., 1345.
- n*-Nonyl alcohol**, Raman spectrum of, A., 11.
- n*-Nonyl nitrate**, Raman effect of, A., 429.
- p*-*n*-Nonylacetophenone**, A., 1369.
- n*-Nonylbenzene**, A., 1369.
- o*-Nonyl- γ -butyrolactone**, A., 474.
- Nonylmalonic acid**, diethyl ester, A., 474.
- p*'-*n*-Nonylphenyl styryl ketone**, A., 1369.
- 1-*n*-Nonylpiperidine**, and its hydrochloride, A., 71.
- n*-Nonylsemicarbazide**, A., 67.
- Nopinene**, synthesis of $\Delta^{1,5}$ -pinadione and, from pinene, A., 624.
alcohol from, by reaction with acetylene, and its silver salt, A., 349.
- Norbornyl derivatives**, *endo-exo*-isomerism of, A., 219.
- Norbornylamines**, isomeric, and their derivatives, A., 219.
- Norcaperic acid**, synthesis of anil of, A., 65.
- Norcaryophyllenic acid**, structure of, A., 489.
and its derivatives, and dibromo-, A., 351.
See also *d*-*cis*-3:3-Dimethylcyclobutane-1:2-dicarboxylic acid.
- cis*-Noroaryophyllenic acid**, A., 90.
- α -Norcholanic acid**, α -3-hydroxy-, A., 1494.
esters, A., 1495.
- Norallocholanic acid**, 3-hydroxy-, and its derivatives, A., 210, 1370.
- Norcivetone**, *isoxime* and *thioisoxime*, A., 869.
- Norcodeine-*N*-carboxylic acid**, amide, A., 367.
- Norepicopropane-3:24-diol**, and its acetate, A., 1494.
- Norepicoprosteryl acetate**, A., 750.
- Nordendrobine**, and its derivatives, and cyano-, A., 764.
- Nordendrobinecarbamide**, A., 764.
- Nordendrobineic acid**, and its derivatives, A., 764.
- dl*-Noreserethole picate**, A., 227.
picronate and benzoyl derivative, A., 636.
- iso*Noreserethole**, and its derivatives, A., 1379.
and its hydrogen oxalate, A., 1250.
- Norleucine**, structure of, A., 1228.
metabolism of, A., 746.
- d*-Norleucine**, A., 1228.
- Norlithocholic acid**. See α -Norcholanic acid, α -3-hydroxy-.
- Norlobarilide**, and its tribromide, A., 1367.
- Normorphine-*N*-carboxylic acid**, amide, A., 367.
- d*-Nornicotine**, A., 1136.
- l*-Nornicotine**, and its salts, A., 1387.
- Norstictinic acid**, potassium salt, A., 83.
- Northern lights**, spectrum of, A., 800.
- Nose**, distribution of glycogen in polypus of, A., 237.
- Notechis scutalis***. See Snake, tiger-.
- Nova Hercules**, spectrum of, A., 424, 675.
diurnal variation of cosmic rays and, A., 1442.
- Novarsenobenzene**, effect of, on respiration of brain, A., 1529.
- Novasurol**, influence of, on tissue cultures, A., 1413.
- Novocaine**, halogen derivatives of, A., 1493.
determination of, gravimetrically, A., 1259.
- Nuclear processes**, A., 1187.
- Nucleic acid**, constitution of, A., 1003.
combination of, with caseinogen, and its effect on fibrinogen coagulation, A., 375.
oxidation of, in tissues, A., 1272.
oxidative deamination of, with organic catalysts, A., 524.
degradation of, by kidney-nuclease, A., 784.
action of proteins with, A., 375.
- Nucleic acids**, localisation of, in cell nucleus, A., 1266.
structure of, and reaction with boric acid, A., 772.
- Nucleoprotein**, histological staining of, A., 1043.
- Nucleoside**, A., 510.
in muscle and tumour extracts, A., 782.
- Nucleosides**, oxidation of, A., 248.
of rabbit's liver, A., 1266.
- Nucleotides**, manufacture of acyl derivatives of, (P.), B., 524.
of rabbit's liver, A., 1266.
- Nutrient solutions**, control of flow of, A., 1043.
- Nutrition**, report on, A., 779.
and diet, A., 1154.
individuality in, and in selection of food, A., 1529.
influence of, on metabolism, A., 779.
deficiencies in, A., 892.
with inorganic salts, A., 243.
- Nutrition**, partial regression method in analysis of data on, A., 242.
- Nymphæa alba***, alkaloid from roots of, A., 635.
- Nymphæine**, and its hydrochloride, A., 635.

O.

- Oak-galls**, variations of tannins during development of, A., 269.
- Oak starch**. See under Starch.
- Oak wood**, molecular structure of, A., 1061.
English, hemicelluloses of, A., 421.
- Oats**, effect of fertilisers, soil type, and climate on, B., 967.
effect of delayed application of nitrogen on protein content of, B., 244.
effect of nitrogen and phosphorus on growth of, B., 37.
utilisation of phosphate fertilisers by mixed sowings of lupins, peas, and, B., 966.
influence of, on succeeding crops, B., 1110.
mixed crops of flax, hemp, and, B., 166.
evaluation of seed of, B., 689.
effect of seed treatments on yield of, B., 167.
effect of crown rust on yield and composition of, A., 798.
food value of, B., 1065.
feeding of pigs with, B., 476.
copper-deficiency disease in, A., 553.
effect of copper sprays against mustard on growth of, B., 167.
irradiated, effect of, on carbohydrate metabolism, A., 892.
analysis of, A., 266.
- Oat hulls**, hemicellulose from, A., 1485.
- Oatmeal**, Chinese, nutritional value of, A., 391.
- Obesity**, basal metabolism in relation to, A., 651.
blood-fat in, A., 517.
blood-fat tolerance tests in, A., 517.
lipin metabolism and electrolytes in, A., 887.
specific dynamic action of protein in, A., 517.
action of thyrotropic hormones on, A., 887.
water studies in, A., 1404.
- Ocean**, conditions of life in, A., 406.
- Oceanography**, chemical data in, A., 841.
- Ochracin**, constitution of, and its derivatives, A., 619.
- iso*Ochracin**, A., 619.
- Ochres**, determination in, of calcium oxide, B., 366, 465.
- Ochronosis** in cattle, A., 650.
- Ocimene**, Raman spectrum of, A., 1301.
- allo*Ocimene**, identity of, with α -pinene, A., 89.
action of, with acetaldehyde and crotonaldehyde, A., 1246.
- Ocimum***, Seychelles, oil from, B., 524.
- Ocimum canum***, production of camphor from, B., 523.
- Octabromotetrakisil-tetroxan**, A., 714.
- Octachlorotetrakisil-tetroxan**, A., 714.
- Δ^8 -Octadecadienoic acid**, β -*dibromo*-, A., 473.
- Octadecahydrochrysene**. See Perhydrochrysene.
- n*-Octadecane**, properties of, B., 538.
- Octadecanedicarboxylic acid**, decamethylene ester, A., 845.
- Octadecanedicarboxylic acid**, *hexabromo*-, and its methyl ester, A., 195.
- Δ^4 -Octadecene**, properties of, B., 538.

- Δ^4 -Octadecenoic acid, $\lambda\mu$ -di- and $\xi\lambda\mu$ -tetra-bromo-, A., 473.**
Octadecodilactone, p -hydroxy-, A., 1351.
Octadecolactone, p -hydroxy-, A., 1351.
Octadecotrilactone, p -hydroxy-, A., 1351.
Octadecyl bromide, preparation of, A., 193.
 β -Octadecylglyceryl ether, and its diphenylurethane, (P.), B., 1130.
Octadecylene, in basking shark-liver oil, B., 641.
 n -Octadecylsulphonic acid, sodium salt, A., 606.
Octadehydromatrine, A., 767.
Octadeteronaphthalene, and its pierate, A., 1358.
 Δ^8 -Octadiene, A., 1348.
1:4:4':5:8:8':9:10'-Octahydroanthraquinone, 2:7-dichloro-, (P.), B., 622.
1:4:5:8:11:12:13:14-Octahydro-12:14-dimethylanthraquinone, and its derivatives, A., 983.
1:2:3:4:1':2':3':4'-Octahydro-1:1'-dinaphthyl, 1:1'-dihydroxy-, A., 1244.
as-Octahydrophenanthrene, syntheses with, A., 1116.
1:2:3:4:5:6:7:8-Octahydrophenanthrene, amino-alcohols derived from, A., 973.
6-as-Octahydrophenanthroic acid, A., 1117.
 β -6-as-Octahydrophenanthropropionic acid, and its semicarbazone, A., 1117.
 γ -6-as-Octahydrophenanthrylbutyric acid, A., 1117.
Octahydrophenazine, and its salts, A., 870.
1:2:3:4:9:10:11:12-Octahydrophenazine, A., 992.
Octahydrostrychnoline, salt of, with zinc chloride, A., 367.
Octahydrotetracyclopentenoanthraquinone, A., 1244.
Octahydroxybyrine, and its pierate, A., 367.
 n -Octaldehyde p -nitrobenzoylhydrazine, A., 1259.
 o -tolylsemicarbazone, A., 1259.
2:7:2':7'-Octamethyltetraamino-9(10):9'(10')-dianthrone, A., 87.
 β -Octamethylcellobiose, A., 1226.
Octamethyldisaccharide, A., 964.
 n -Octane, catalytic isomerisation of, A., 324.
equilibrium of, with octylene, A., 165.
Octane, (—) β -bromo-, A., 1230.
Octanes, determination of, by chlorination, A., 728, 1102.
***dicyclo*-[2:2:2]-Octane, synthesis of, A., 1123.**
0:3:3-*dicyclo*Octane derivatives, A., 748.
***cis*- and *trans*-0:3:3-*dicyclo*Octanes, A., 750.**
 n -Octane-*ae*-diol, A., 626.
(+) β -Octanesulphonic acid, and its barium salt, A., 1230.
***dicyclo*-[2:2:2]-Octanol, and its derivatives, A., 1124.**
***dicyclo*-[2:2:2]-Octanone, synthesis of, and its oxime, A., 1123.**
***trans*- β -0:3:3-*dicyclo*Octanone, A., 750.**
***d-trans*- β -[0:3:3]-*dicyclo*Octanone, and its semicarbazone, A., 1240.**
0:3:3-*dicyclo*Octan-1-one-2:3-dicarboxylic acid, and its ethyl ester and semicarbazone, A., 748.
2:3:4:5:2':3':4':5'-Octaphenyldiphenyl, A., 968.
Octin, spasm-alleviating action of, in lead poisoning, A., 399.
inhibition of peristalsis and tonus of intestines by, A., 526.
"Octinum," effect of, on bile secretion, A., 116.
Octodilactone, η -hydroxy-, A., 1351.
- Octoic acid, surface potential of aqueous solutions of, A., 698.**
cellulose esters, A., 736.
derivatives of phenols and, (P.), B., 761.
Octolactone, η -hydroxy-, A., 1351.
Octopus, acetylcholine from ganglia of, A., 1522.
***Octopus vulgaris*, choline esters in, A., 1157.**
Octyl alcohol, Raman spectrum of, A., 11.
surface potential of aqueous solutions of, A., 698.
Octyl hydrogen sulphate, θ -hydroxy-, (P.), B., 1131.
 β -Octyl iodide, rotatory dispersion of, A., 1192.
nitrite, circular dichroism of vapour of, A., 431.
(+) β -Octyl phenyl sulphide, A., 1230.
(—) β -Octyl ethyl and methyl sulphides, and phenyl ether, A., 1230.
***dicyclo*-[2:2:2]-Octyl chloride, A., 1124.**
Octylacetacetic acid, ethyl ester, A., 1352.
 α -*n*-Octyladipic acid, A., 1497.
***dicyclo*-[2:2:2]-Octylamine, and its salts, A., 1123.**
4-*n*-Octylamino-2-naphthyl β -diethylaminoethyl ether, (P.), B., 1132.
***m*-Octylaminophenyl β -diethylaminoethyl ether, (P.), B., 1132.**
***sec*-Octylaniline, and its *p*-toluenesulphonyl derivative, A., 1489.**
 α -Octyl- γ -butyrolactone, A., 474.
4-*n*-Octyl-*m*-cresol, A., 614.
***r*-Octylglutaric acid, A., 1352.**
***l*-Octylglutaric acid, strychnine salt, A., 1352.**
1-*iso*Octylhydrindene, A., 738.
Octylmalonic acid, diethyl ester, A., 474.
***m*-Octyloxyphenyl β -diethylaminoethyl sulphide, (P.), B., 1132.**
***p*-Octyloxyphenyl β -diethylaminoethyl ether, (P.), B., 1132.**
***m*-Octyloxyphenyl- β -diethylaminoethylamine, (P.), B., 1132.**
2-*n*-Octylcyclopentanol, and its bromide, A., 1497.
2-*n*-Octylcyclopentanone, and its semicarbazone, A., 1497.
2-*n*-Octylcyclopentanone-2-carboxylic acid, ethyl ester, and its semicarbazone, A., 1497.
***n*-Octyl- Δ^1 -cyclopentene, A., 1497.**
Octylphenols, manufacture of, and ethers thereof, (P.), B., 1132.
***p*'-*n*-Octylphenyl styryl ketone, A., 1369.**
(—)*N*- β -Octylpiperidine, A., 1230.
***n*-Octylsulphinic acid, *n*-butyl ester, A., 1105.**
***n*-Octylsulphonic acid, sodium salt, A., 606.**
(—) β -Octylthiol, A., 1230.
***m*-Octylthiolphenyl β -diethylaminoethyl ether, (P.), B., 1132.**
(—)*N*- β -Octyl-*p*-toluidine, A., 1230.
***Odontria zealandica*, control of, B., 374.**
Odour and constitution, A., 474.
Odours, classification of, B., 1165.
Edema, A., 1402.
formation of, in feet, in relation to standing, A., 385.
mechanism of, A., 385.
cardiac, ammonium chloride and salyrgan in, A., 1010.
plasma-proteins in, A., 650.
nutritional, in dogs, A., 1269.
***Esophagostomum*, effect of copper sulphate on larvae of, B., 1158.**
Estin, A., 413.
structure of, A., 752.
extraction of, from female urine, A., 1425.
- Estin, synergism between oxytocin and, A., 1425.**
synergism between pituitrin and, A., 259.
specific action of, A., 128.
effect of, on pancreatic diabetes in monkeys, A., 413.
on mammary glands of male mice, A., 413.
on anterior pituitary of male and female rats, A., 1425.
on pituitary-gonad complex in female rats, A., 902.
on developing ova, A., 1173.
on ovaries and adrenals, A., 1425.
on seminal vesicles of albino rats, A., 1173.
on uterus, A., 1425.
on rabbit's uterus, A., 1173.
metaplasia of uterine epithelium produced by, A., 259.
absence of anti-hormones against, A., 413.
in blood of women, A., 791.
in corpus luteum, A., 791.
in pregnancy urine, A., 1426.
in pregnancy urine and placenta of chimpanzees, A., 902.
determination of, in urine of women, colorimetrically, A., 1034.
Estriol, hydrolysis and determination of, in human pregnancy urine, A., 1034.
Estrogenic substances, chemistry of, A., 1033.
Estrone, stability of standard alcoholic solutions of, A., 666.
effect of, on prostate glands, A., 791.
hydrolysis and determination of, in human pregnancy urine, A., 1034.
treatment of rats with androsterone and, A., 1545.
Estrus, production of, in hypophysectomised rats parabiotically connected with castrates, A., 413.
effect of gonadotropic hormones on, A., 666.
effect of prolactin on, A., 1284.
in ovariectomy, effect of theelin on, A., 1426.
Oidium, sulphur-dusting treatment for, B., 822.
Oils, colour measurement of, B., 773.
colours of films of, on water, A., 1201.
light testing apparatus for, (P.), B., 295.
heating of, (P.), B., 2.
oxidation-reduction potential in hydrolysis of, A., 585.
optical examination of, (P.), B., 51.
determination of anticorrosive action of, B., 63.
partition between water and, of miscible substances, A., 695.
animal, gadusene from, A., 1264.
animal marine, A., 1145.
constants of oils from, B., 560.
treatment of oils from, (P.), B., 561.
unsaponifiable matter of oils of, B., 733.
cutting. See Cutting oils.
drying, B., 860.
production of, (P.), B., 814, 1102.
from synthetic acids and petroleum-cracking polymerides, B., 318.
from rubber, (P.), B., 1155.
treatment of, (P.), B., 683.
production and treatment of gels of, (P.), B., 735.
ultramicroscopic study of, B., 597.
determination of strength of films of, B., 319.
polymerisation of, B., 237.

- Oils, drying, for varnishes, B., 1055.**
 from acid petroleum sludge, B., 1030.
 polymerised, distillation of, (P.), B., 238.
 synthetic, B., 463.
 edible, surface tension of, B., 1022.
- Oils, essential, B., 333.**
 production of, in the British Empire for perfumes, B., 124.
 in Seychelles, B., 523, 524.
 from Ukrainian lupulin, B., 933.
 from leaves of Washington conifers, B., 1068.
 removal of terpenes from, B., 701.
 distillation of, B., 286.
 optical dispersion of, B., 573.
 viscosity, surface tension, and capillarity of, B., 46.
 detection in, of mint oils, B., 1118.
 determination of, in drugs, B., 286, 1068.
 determination in, of primary and secondary alcohols, B., 333, 1118.
 of ethyl and methyl alcohols, B., 828, 1023.
 of ethyl phthalate, B., 573.
 of salol, B., 829.
- Oils, fatty, German crops for production of, B., 1157.**
 cleaning of filter-cloths and plant in production of, B., 30.
 extraction of, (P.), B., 238.
 alcohol extraction of, B., 318, 559.
 refining of, with recovery of solvents, (P.), B., 774.
 fractionation in, B., 1101.
 bleaching of, B., 958, 1054.
 decolorisation of, B., 158.
 adsorbent for, (P.), B., 277.
 filter-cloths for, B., 1135.
 destearinising of, (P.), B., 734.
 ammonia as source of hydrogen for hardening of, B., 269.
 splitting of, in autoclaves, B., 276, 317, 597.
 action of Twitchell reagents on, B., 276, 317.
 improvement of, B., 508.
 properties and uses of, B., 275.
 absorption spectra of, B., 912.
 irradiation of, with ultra-violet light, B., 1054.
 effect of purity on electrical resistance of, B., 596.
 characterisation of, by their polarity, B., 911.
 apparatus for measurement of thermal conductivity of, B., 1003.
 determination of m.p. of, B., 416.
 sp. gr. of, and their shipment, B., 464.
 production of emulsions of, with water, (P.), B., 860.
 susceptibilities of, to oxidation, B., 158.
 polymerisation of, A., 1482; B., 559, 640; (P.), B., 683.
 determination of saponification value of, B., 509.
 surface tension and alkali concentration in saponification of, B., 640.
 formation of isoleic acid in sulphonation of, B., 318.
 transformation of fatty acids in sulphonation of, B., 159.
 unsaturated acids of, A., 607.
 vitamins in, B., 732.
 product from, for varnishes, resins, etc., (P.), B., 959.
 penetration of paper by, B., 1040.
 refinement of vitamin concentrates from, (P.), B., 1150.
- Oils, fatty, preservation of, (P.), B., 109, 1150.**
 removal of, from meat, fish, etc., (P.), B., 959.
 removal of water from materials containing, (P.), B., 109.
 determination of rancidity of, colorimetrically, B., 1003.
 effects of light on rancidity of, (P.), B., 1101.
 rancidity and preservation of, B., 596.
 spoilage of, B., 363.
 effect of air, light, and plant enzymes on, B., 859.
 air-blowing accelerated test for, B., 912.
 microscopy of, B., 129.
 measurement of colour of, B., 774.
 colour standards for, B., 68.
 "deterioration value" of, B., 364.
 hypochlorous acid value of, B., 365.
 determination of Hübl iodine value of, B., 1150.
 determination of unsaturation of, by Kaufmann's thiocyanogen method, B., 683.
 sterol iodine values of, B., 464.
 animal and vegetable, extraction of, (P.), B., 159.
 refining of, (P.), B., 417, 561.
 hydro-cracking of, B., 158.
 for paints, B., 159.
 blown, manufacture of, (P.), B., 276.
 edible, production of, (P.), B., 597.
 manufacture of emulsions of, (P.), B., 160.
 purification of, B., 159.
 hardened, detection of, by vacuum ester process, B., 364.
 in foods, B., 159.
 Indian, oleic and linoleic acid contents of, B., 68.
 rancid, gaseous decomposition products of, B., 733.
 sulphated and sulphonated, determination of active ingredients and total fatty matter in, B., 641.
 sulphonated, B., 641.
 manufacture of, (P.), B., 160.
 analysis of, B., 276, 558.
 sulphurised, production of, B., 237.
 unsaturated, condensation products from, (P.), B., 737.
 oxidation of, in the atmosphere, B., 640.
 Kreis test on, B., 364.
 detection and determination in, of cobalt, B., 813.
 determination in, of unsaponifiable matter, B., 1002.
- Oils, hydrocarbon, manufacture of, from carbonaceous materials, (P.), B., 936.**
 from solid carbonaceous materials, (P.), B., 135, 838.
 from industrial gases, B., 885.
 recovery of, from carbonaceous materials, (P.), B., 393.
 from exhaust gases, (P.), B., 216.
 treatment of, (P.), B., 11, 55, 56, 90, 135, 136, 181, 215, 296, 344, 345, 486, 663, 713, 892, 893, 1126, 1128.
 with alkaline sulphides, (P.), B., 937.
 purification of, (P.), B., 89, 90, 135, 215, 713.
 purification and sweetening of, (P.), B., 344.
 refining of, (P.), B., 10, 89, 135, 136, 215, 294, 295, 344, 345, 616, 617, 713, 794, 892, 1083, 1126.
 by emulsification, (P.), B., 759.
 hydrolysis of acid sludge from, (P.), B., 838.
- Oils, hydrocarbon, solvent refining of, (P.), B., 712.**
 removal of naphthenic acids from, (P.), B., 1127.
 desulphurisation of, (P.), B., 135, 136, 215, 713, 937.
 removal of sulphur dioxide from, (P.), B., 136.
 dewaxing of, (P.), B., 136, 217, 296, 617, 793, 892, 936, 1034, 1035.
 clarification of, (P.), B., 1035.
 prevention of discoloration and gum formation in, (P.), B., 616.
 coking of, (P.), B., 486, 537.
 cracking of, (P.), B., 10, 11, 56, 217, 296, 440, 486, 662, 663, 759, 793, 1035.
 apparatus for, (P.), B., 296, 795.
 handling residuum from, (P.), B., 892.
 steel apparatus for, (P.), B., 180.
 for production of ethylene, (P.), B., 343.
 vapour-phase cracking of, (P.), B., 892.
 cracking of suspensions of coal in, (P.), B., 1126.
 cracking and coking of mixtures of bituminous materials and, (P.), B., 180.
 distillation of, (P.), B., 11, 893, 1035.
 apparatus for, (P.), B., 296.
 and coal, (P.), B., 712.
 preventing corrosion of apparatus for, (P.), B., 893.
 Engler-Ubbelohde distillation curves of, B., 709.
 fractional distillation of, (P.), B., 11.
 apparatus for, (P.), B., 11.
 distillation and conversion of, (P.), B., 486.
 apparatus for fractionation of, (P.), B., 296.
 rectification of, (P.), B., 11.
 heating of, (P.), B., 90, 486, 794.
 heat treatment of, (P.), B., 662.
 heating and fractionation of, (P.), B., 793.
 sweetening of, (P.), B., 136, 1128.
 mixing of, (P.), B., 486.
 action of silent electric discharge on, B., 178.
 absorption of, (P.), B., 663.
 production of emulsions of, (P.), B., 758.
 conversion of, (P.), B., 11, 56, 214, 217, 296, 344, 663, 892, 1035.
 decomposition of, (P.), B., 1034.
 hydrogenation of, (P.), B., 90.
 production of lubricants by, (P.), B., 345.
 catalytic hydrogenation of, (P.), B., 135.
 hydrogenolysis and methanolysis of, (P.), B., 441.
 splitting and hydrogenation of, (P.), B., 1126.
 sludge formation in autoxidation of, B., 1032.
 regeneration of doctor sludge from, (P.), B., 759.
 stabilisation of, (P.), B., 136, 793.
 manufacture of fuel gas from, (P.), B., 88.
 production of motor fuels from, (P.), B., 1128.
 manufacture of nitrogen bases from, (P.), B., 345.
 acid-treated, neutralisation of, (P.), B., 89.
 cracked, refining of, (P.), B., 55.
 crude, physical and thermal properties of, B., 886.
 Diesel, from Fischer-Tropsch benzene synthesis, B., 709.
 heavy, treatment of, in engines, (P.), B., 760.

- Oils, hydrocarbon, heavy, cracking of** (P.), B., 296.
 destructive hydrogenation of, (P.), B., 135.
 treatment of residues of, (P.), B., 663.
 light, stabilisation of, (P.), B., 11.
 low-boiling, production of, (P.), B., 712.
 sour, refining of, (P.), B., 56.
Oils, illuminating, treatment of (P.), B., 295.
 medicinal, manufacture of, from mineral oils, (P.), B., 1023.
 surface tension of, B., 1022.
 sterilisation of, B., 605.
Oils, mineral, origin of A., 191.
 determination of mol. wt. of, B., 536.
 geophysics of formation of, A., 724.
 production of, from anthracene, B., 1030.
 from coal, B., 131.
 in coke ovens, B., 979.
 metals for use in, B., 729.
 recovery of, from carbonaceous materials, (P.), B., 88.
 treatment of, (P.), B., 217, 486, 891, 1034.
 with solvents, (P.), B., 486.
 purification of, (P.), B., 11.
 refining of, (P.), B., 136, 260, 294, 344, 346, 385, 712, 713.
 apparatus for, (P.), B., 893, 983.
 heat exchangers for, B., 1081.
 contact filtration and pressure filters in, B., 757.
 treatment of acid sludge from, (P.), B., 538.
 revivification of adsorbents from, (P.), B., 216.
 with aluminium chloride, (P.), B., 217.
 bauxite adsorbents for, (P.), B., 147.
 with Russian clays, B., 7.
 reclamation of spent doctor solutions from, (P.), B., 983.
 solvent refining of, B., 756.
 by-products from sulphuric acid refining of, (P.), B., 56.
 decolorisation of, (P.), B., 712.
 decolorisation and clarification of, (P.), B., 210.
 removal of olefines from, (P.), B., 138.
 removal of solvents from, (P.), B., 538.
 desulphurisation of, (P.), B., 1126.
 dewaxing of, B., 259; (P.), B., 215, 217, 346, 759, 1035, 1127.
 by filtration, (P.), B., 893.
 prevention of frosting of filter-presses for, (P.), B., 1121.
 separation of, (P.), B., 11.
 by extraction, (P.), B., 4.
 separation of products from, (P.), B., 1127.
 separation of water from emulsions of, (P.), B., 216.
 lining for vessels for, (P.), B., 90.
 filters for, (P.), B., 218.
 conversion of, (P.), B., 11, 56.
 coking of, (P.), B., 663.
 cracking of, (P.), B., 11, 296, 538, 486, 662, 892.
 design of plant for, B., 709.
 Dubbs plant for, B., 613.
 by "phenylic" method, B., 1030.
 Soviet apparatus for, B., 1030.
 by T.V.P. process, B., 7.
 under pressure, B., 7.
 apparatus for, (P.), B., 217.
 reduction of residuum from, (P.), B., 296.
 distillation of, (P.), B., 11, 217.
 high-vacuum distillation of, B., 259.
 fractionation of, (P.), B., 1035.
 heat treatment of, (P.), B., 486.
 effect of high temperatures on, B., 7.
- Oils, mineral, hydrogenation of** (P.), B., 712.
 destructive hydrogenation of, B., 790; (P.), B., 616.
 regeneration of, with silica gel, B., 132.
 effect of artificial ageing on physical constants of, B., 1032.
 determination of fluorescence of, B., 1032.
 X-ray diffraction of films of, A., 18.
 electrical properties of, B., 1125.
 pressure-volume-temperature relations for, A., 156.
 liquid hydrogen sulphide as selective solvent for tar and, B., 581.
 pseudo-plasticity in, B., 1125.
 dispersions of fuels in, (P.), B., 538.
 inversion of emulsions of, B., 7.
 breaking of emulsions of, B., 1029.
 with kerosene alkali sludge, B., 1029.
 analysis of emulsions and suspensions of, B., 1029.
 neutralisation of, after acid treatment, (P.), B., 10.
 neutralisation and saponification values of, B., 293.
 oxidation of, by oxygen, B., 709.
 prevention of discoloration of, (P.), B., 759.
 humification of, during weathering, B., 1032.
 stabilisation of, (P.), B., 794.
 physical constants of products from, B., 980.
 preheating of stored products of, B., 1032.
 mixtures of resins and, for insulation, (P.), B., 11.
 boundary lubricating value of, B., 212.
 production of sulphonates of, (P.), B., 294.
 production of sulphonation products from, (P.), B., 937.
 sulphonic acids from, B., 132, 438, 1081.
 agglomeration of suspended particles of water in, (P.), B., 663.
 asphaltic, determination in, of paraffin, B., 886.
 Baikal crude, B., 1029.
 Baku crude, sulphur compounds in distillates of, B., 1029.
 Chimion crude, B., 1029.
 cracked, molecular weight of, B., 259.
 crude, removal of salts from, (P.), B., 1034.
 preliminary caustic treatment of, B., 1029.
 distillation of, to coke, (P.), B., 10.
 apparatus for, (P.), B., 610.
 latent heat of evaporation of fractions of, B., 131.
 evaluation of, B., 1030.
 analysis of, B., 391.
 Emba crude, B., 1029.
 oxidation of, by bacteria, B., 1032.
 Fergana crude, of Shorsu deposit, B., 1029.
 Grozni, refining of, B., 7.
 heavy, electrical conductivity of, B., 660.
 coking of, (P.), B., 1035.
 combustion of, B., 614.
 cracking of, (P.), B., 936.
 light, production of, from peanut oil, B., 660.
 in the Pittsburgh region, A., 724.
 Rumanian crude, naphthalene and 2-methylnaphthalene in, B., 1081.
 Sakhalin crude, B., 1029.
 Shukkoko crude, separation of benzene, toluene, and xylene from, B., 392, 581.
- Oils, mineral, sulphonated, use of, in processing of textiles** B., 897.
 Texas, crude, composition of, B., 483.
 Turkmenian crude, B., 1029.
 determination of colour of, B., 614.
 testing of, B., 934.
 testing of high-boiling fractions of, B., 836.
 determination in, of oxygen, B., 483.
 of paraffin, B., 391.
 of sulphur, B., 179, 391.
Oils, natural, origin of A., 324.
 unsaturated acids of, A., 1041.
 petroleum. See Petroleum oil.
 shale. See under Shale.
 soluble, (P.), B., 485.
 vegetable, production of, biochemically, by Beckmann process, B., 1003.
 purification of, (P.), B., 733.
 liquid-phase cracking of, B., 980.
 ultra-violet absorption of, B., 559.
 colour and spectral transmission of, B., 912.
 dielectric properties of, A., 1192.
 mutual solubilities of, B., 318.
 constituents of, B., 509.
 acids of uneven number of carbon atoms in, A., 1435, 1550.
 gadusene in, A., 1264.
 vitamin-D content of, A., 1036.
 Philippine, physical properties of, B., 416.
 Suiyuan, vitamins-A and -D in, A., 1286.
Oil cake, determination in, of crude fibre B., 747.
Oil fields, recovery of barytes from drilling muds from B., 391.
Oil-field water. See under Water.
Oil seeds, extraction of, by Russian methods B., 1054.
 effect of temperature on moisture content of pulp of, B., 1149.
 Indian, B., 859.
 Manchurian, B., 559.
 Philippine, composition and oils of, B., 1002.
 determination in, of fat, refractometrically, B., 317.
 of crude fibre, B., 747.
Oil shale. See under Shale.
Oil wells, separation of solids from mud from (P.), B., 787.
 viscosity and thixotropy of drilling mud of, B., 933.
 prevention of choking of, (P.), B., 891.
 bibliography on cements for, B., 950.
 deep, treatment of, (P.), B., 394.
Oilcloth, manufacture of (P.), B., 1091.
 backing for, (P.), B., 161.
Oilskins, B., 319.
Ointments, structure of B., 1163.
 vitamin-D in cholesterol bases for, B., 429.
 aconitine, absorption from, A., 119.
 mercury, production of, using ferric chloride, B., 45.
 analysis of, B., 253.
 mercuric nitrate, assay of, B., 253, 605.
 skin-cleansing, manufacture of, from magnesium hydroxide, (P.), B., 784.
 determination in, of sulphur, B., 724, 1117.
Oiticica oil, A., 1350.
 unsaturated acids from, A., 607.
 Brazilian, B., 304.
Oleaginous materials, heat treatment of (P.), B., 416.
Oleanenolactone, A., 1127.

- Oleanolic acid**, constitution of, A., 1126.
oxidation of, A., 865.
- Oleanolo- γ -lactone**, 8-hydroxy-, and its derivatives, A., 865.
- epiOleanonic acid**, methyl ester, A., 1127.
- Oleanonolactone**, and its oxime, A., 1127.
- Oleanonolactone**, dibromo-, and its derivatives, A., 1126.
- Oleanono- γ -lactone**, 8-hydroxy-, and its derivatives, A., 865.
- Olefines**, C_8 to C_{11} , bromo-derivatives of, A., 844.
- Olefines**, formation of, in reaction of sodium hydroxide with bromoethanes, A., 1465.
by action of sulphuric acid on methyl-isopropylcarbinol, and their polymerisation, A., 192.
- production of, (P.), B., 839, 938.
from petroleum, B., 536.
- recovery of, from gaseous hydrocarbons, (P.), B., 617.
- treatment of, with carbon monoxide, (P.), B., 761.
- absorption of, from mineral oils, (P.), B., 138.
- alkylation of, catalysis of, by phosphorus pentoxide, A., 852.
- inhibition of substitution in chlorination of, (P.), B., 138.
- cyclisation of, A., 481.
- hydration of, (P.), B., 1084.
- catalytic hydration of, (P.), B., 138, 262.
- mercuration of, A., 1515.
- pyrolysis of, (P.), B., 893.
- effect of acids and peroxides on reduction of, with platinum oxide catalyst, A., 192.
- sulphation of, (P.), B., 395, 442.
- action of hydrogen peroxide on, A., 957.
- reaction of, with naphthenic hydrocarbons, A., 1357.
with paraffins, A., 1348.
with sulphur dioxide, A., 1349.
- addition of aniline to, A., 1488.
- production of derivatives of, (P.), B., 619.
- manufacture of chloro-derivatives of, (P.), B., 618.
- uses of, B., 1084.
- production of alcohols from, (P.), B., 395.
- production of gasoline by polymerisation of, B., 887.
- production of sulphuric esters from, (P.), B., 182.
- chlorinated, rubber substitute ("Thiokol") from polymerides of, B., 1006.
- from cracked gases, polymerisation of, B., 7.
- cyclic, stability and reactivity of, A., 203.
- gaseous, manufacture of, (P.), B., 343.
- catalytic polymerisation of, by phosphoric acid, B., 1035.
- pyrolysis and polymerisation of, B., 979.
- determination of, in coke-oven gas, B., 789.
- Olefinic acids**, A., 195.
- Oleic acid**, and its *n*-alkyl esters, preparation and properties of, A., 1064.
humification of, during weathering, B., 1032.
rancidity and constitution of, B., 363.
wetting by mixtures of sodium hydroxide and, B., 1129.
and its esters, autoxidation of, B., 364.
action of atomic hydrogen on, A., 730.
potassium and sodium salts, magnetic rotation of, A., 148.
sodium salt, cryolysis and diffusion of, A., 932.
- Oleic acid**, esters, synthesis and hydrogenation of, A., 1350.
alkyl esters, purification of, A., 1350.
allyl, butyl, and isopropyl esters, A., 1350.
ethyl- and phenyl-mercuric esters, manufacture of, (P.), B., 333.
phytosteryl ester, A., 487.
determination of, A., 876.
- isoOleic acid**, formation of, in sulphonation of oils, B., 318.
- α -Olein, preparation of, A., 473.
- Oleo-resins**, formation of, A., 1549.
pine, acids of, A., 495.
- Oleum**. See Sulphuric acid, fuming.
- Oleyl chloride**, preparation of, A., 473.
- Oligodynamy** of irradiated metals, A., 896.
- Oligonite**, from Leadville, Colorado, A., 60.
- Oligosaccharides**, methylated, molecular sizes of, A., 1355.
- Olives**, cultivation of, in Palestine, B., 38.
alcohol and sugar contents of press-water from, B., 237.
oil content as criterion of maturity of, B., 1002.
knot disease of, B., 1111.
- Olive oil**, effect of pigments on fluorescence of, B., 559.
hydrogenation of, B., 559.
evaluation of foots from, B., 509.
unsaturated hydrocarbon in, B., 276.
vitamins of, A., 260; B., 416.
reaction of, with concentrated sulphuric acid, B., 641.
lubrication of internal-combustion engines with, B., 532.
lubrication of metals with, B., 813.
crude, vitamin-D in, A., 1036.
sulphurated, pharmacology of, A., 655.
testing of, B., 463.
fluorescence test for, B., 194.
- Olivetol dimethyl ether**, A., 347.
- Olivetol**, bromo-, A., 1234.
- Olivetolcarboxylic acid**, methyl ester, dimethyl ether of, A., 1367.
- Olivine**, production of refractories from, B., 768.
- Onions**, decane ring-spot of leaves of, B., 919.
toxicity of phenolic compounds to bulb parasites on, B., 516.
pink root and bulb rot of, B., 1012.
control of thrips in, B., 327.
dried, vitamin-C content of, A., 417.
green, vitamin-C in, B., 171.
- Oophorectomy**, hormones in urine following, A., 542.
- Oospora lactis**, effect of temperature, salt, and acidity on growth of, A., 786.
- Opacimeters**, for paper, B., 1136.
- Opacity**, measurement of, (P.), B., 1056.
- Opals**, X-ray study of, A., 324.
properties of, A., 1479.
- Opaque objects**, ultra-violet microscope for examination of, A., 188.
- Ophiobolus graminis**, sterilisation with silver nitrate in isolation of, A., 1540.
- Opianic acid**, synthesis of, A., 490.
- Opium derivatives**, detection of, in saliva, A., 1274.
assay of, B., 748.
determination in, of morphine, A., 507; B., 45, 477, 573, 877, 1067.
- Opium addicts**, blood-serum of, A., 1394.
blood-serum and -sugar of, A., 246.
- Opium alkaloids**, action of, on alkali reserve, adrenaline, sugar, etc., in blood, A., 1410.
on respiration in rabbits, A., 528.
on rabbit uterus, A., 1156.
hyperglycæmic action of, A., 1156.
- Opium juice**, morphine in, B., 1022.
- Opossum**, adrenal insufficiency in, A., 1421.
- Opso-pyrrolealdehyde**, A., 631.
- Optical absorption**, and double linkings, A., 1300.
activity, theory of, A., 917.
and chemical constitution, A., 1127.
connected with multiplanar rings, A., 1239.
asymmetry, occurrence of, A., 324.
- Opzims**, non-specific concentrating power of, A., 660.
- Oranges**, feeding-value of cannery refuse of, B., 605, 1066.
effect of ammonium bicarbonate on storage of, B., 378.
Chinese, vitamin-C of, A., 1430.
Conner, Valencia, and Satsuma, effect of calcium hydroxide on composition of, B., 373.
Navel, Valencia, and Washington, nitrogen in proteins of, A., 905.
Valencia, crystallisation of, B., 43.
- Orange-flower water**, B., 124.
- Orange juice**, composition of, from girdled and normal trees, A., 266.
browning of, B., 427.
preservation of, B., 122.
by canning, B., 78.
- Orange oil**, from French Guinea, B., 45.
- Orange trees**, effect of iron and zinc salts on mottle-leaf of, A., 1548.
mineral deficiency and chlorosis of, B., 282.
distribution of nitrogen in, A., 552.
Santra, leaves, flowers, and fruit of, A., 1039.
- Orchards**, fertilisers for, B., 1157.
insecticidal sprays for, B., 118.
winter sprays for, B., 1159.
tropical, determination of nutrient requirements of, by leaf analysis, B., 1157.
- Orchids**, control of weevil in, B., 247.
- Orcinol**, quinones from homologues of, A., 347.
- Ores**, differentiation in deposition of, A., 955.
treatment of, (P.), B., 502.
by amalgamation, (P.), B., 772.
classifiers for, (P.), B., 531.
drying apparatus for, (P.), B., 434, 810.
apparatus for drying, roasting, etc., of, (P.), B., 657.
- flotation concentration** of, B., 856; (P.), B., 29, 506.
collector for, (P.), B., 193.
- flotation of**, agents for, (P.), B., 106.
centrifugal separators for, (P.), B., 786.
- comminution** of, (P.), B., 386.
- crushers** for, (P.), B., 786.
- mills** for, (P.), B., 657.
- dressing** of, in Canada, B., 996.
use of suspensions in, B., 457.
- roasting** of, (P.), B., 234.
furnaces for, (P.), B., 679.
- roasting and fritting** of, in turbulent flow furnaces, B., 809.
- agglomerating, binding, and sintering** of dusts of, (P.), B., 637.
- sintering** of, apparatus for, (P.), B., 66.
Dwight-Lloyd sintering of, B., 727.
- sintering and sinter-roasting** of, B., 727.
- furnaces** for smelting of, (P.), B., 906.
- reduction** of, (P.), B., 29, 106.
in blast furnaces, B., 150.
- electrical reduction** of, (P.), B., 638.
- bog-**, of Kareljan A.S.S.R., A., 1346.
- Canadian**, dressing of, B., 312.
- Colorado**, deposition of, A., 1345.

Ores of East Bothnia and the Skellefte area, A., 190.
 fine, blast-roasting or sintering of, (P.), B., 503.
 sintering of, (P.), B., 955.
 of Flathead Mine, N.W. Montana, genesis of, A., 1478.
 of N. Arkansas, occurrence of enargite and wulfenite in, A., 469.
 non-ferrous, chlorination of, B., 856.
 oxidised, collector for flotation of, (P.), B., 505.
 precious-metal, concentration of, by froth flotation, (P.), B., 999.
 pulverised, rotary furnaces for treatment of, with gases, (P.), B., 857.
 in Sardinia, B., 951.
 sulphide, treatment of, (P.), B., 106.
 flotation of, (P.), B., 680.
 preparation of flotation concentrates of, (P.), B., 955.
 roasting of, (P.), B., 414.
 furnaces for, (P.), B., 555.
 smelting of, (P.), B., 235.
 recovery of sulphur from, (P.), B., 495.
 chloridising of, (P.), B., 156.
 adsorption of amines by, A., 1458.
 production of sulphur chlorides and metallic chlorides from, B., 21.
 determination in, of molybdenum, potentiometrically, B., 677.
 of stibnite sulphur, B., 1049.
Organs, melanophoric action of extracts of, A., 411.
 amphibian, changes in tissue-proteases during regeneration of, A., 779.
 animal, balance of water in, during injection of carbohydrates, A., 240.
 animal and human, copper content of, A., 883.
 endocrine, of rabbits, iodine content of, A., 1396.
 whole, culture of, A., 1150.
Organ extracts, depressor action of, A., 396.
 homologous, coagulating action of, A., 1002.
Organic chemistry, structural theory of, A., 1305, 1479.
 and Raman effect, A., 73.
 electronic theory and, A., 431, 843.
 quantum mechanics and kinetics of reactions in, A., 1463.
Organic compounds, constitution and morphological relations of, A., 492.
 constitution and molecular heat of fusion of, A., 1133.
 constitution and reactivity of, A., 863, 967, 970, 1113.
 constitution and colour of, A., 973.
 determination of constitution of, by oxidation, A., 472.
 interfacial energy and molecular structure of, A., 442.
 arrangement of formulæ of, in a biochemical triangle, A., 603.
 bond energies and valency angles in, A., 810.
 electronic diagrams of, A., 813.
 application of electron diffraction to study of, A., 191.
 functional groups and linkings in, A., 469.
 electrolytic synthesis of, A., 324.
 use of fractional adsorption in production of, B., 12.
 recovery of, from aqueous solutions, (P.), B., 784.
 stabilisers for, (P.), B., 894.
 purification of, by steam distillation, (P.), B., 219.

Organic compounds, fractionation and purification of, by chromatographic adsorption, A., 204, 362.
 purification and physical properties of, A., 436, 924, 1077.
 Raman spectra of, A., 11, 146, 428, 957.
 absorption spectra of colloidal solutions of, A., 1459.
 ultra-violet absorption spectra of, A., 145.
 action of tropical sunlight on, A., 1087.
 theory of fluorescence of, A., 1302.
 rotatory dispersion of, A., 809, 1304.
 intramolecular rotation in, A., 15.
 rotating polar groups in, A., 1192.
 sensitivity of, to X-rays, A., 832.
 electrolysis of, in non-aqueous media, A., 1349.
 reduction potentials of, A., 305, 706, 826, 1463.
 electric moments of, A., 1447.
 dipole moment and structure of, A., 976, 1115.
 magnetochemistry of, A., 689, 1116, 1370, 1453.
 heat-capacities and entropies of, A., 1339.
 determination of heats of combustion of, A., 465.
 heats of fusion of, A., 304, 436.
 effect of impurities on, A., 436.
 molar heats of fusion and m.p. of, A., 290.
 apparatus for determination of fusion temperatures of, A., 465.
 effect of high pressure on temperatures of fusion and of transformation of, A., 688.
 heats of sublimation of, A., 436.
 liquid, optical polarisation of, A., 148.
 magnetic double refraction of, A., 149.
 colours produced in mixtures of cupric chloride and halogen hydrides by, A., 167.
 solid, determination in, of water, A., 1140.
 liquid crystal formation in, A., 436.
 crystal precipitation of, by salting out, A., 1140.
 surface energy and b.p. of homologous series of, A., 21.
 ternary systems of, A., 303.
 thermal analysis of, A., 36.
 internal energy relationships of, A., 329, 852, 957, 1286.
 kinetics of cyclisation of, A., 960.
 determination of degree of decomposition of, A., 876.
 thermal decomposition of, A., 62, 191, 471.
 hydrogen-atom concentration during, A., 1206.
 β -epoxy-tautomerism in degradation of, A., 1103.
 fluorination of, (P.), B., 715.
 halogenation of, A., 76.
 nitration of, (P.), B., 761.
 oxidation of, by sulphuric acid, A., 1210.
 with selenium dioxide, A., 852.
 catalytic oxidation of, in vapour state, A., 43.
 chromic acid oxidation of, A., 1140.
 separation of partial oxidation products from, (P.), B., 664.
 polymerisation of, (P.), B., 13, 195.
 and their ability to form colloids, B., 442.
 reaction of, with niobium and tantalum pentachlorides, A., 73.
 reactivity of atoms and groups in, A., 487, 1206.

Organic compounds, effect of substituents on reactivity of functional groups in, A., 1232.
 removal of hydrogen and acid radicals from, by means of bases, A., 939.
 effect of substituents on energy of activation of, A., 1327.
 substitution at saturated carbon atoms in, A., 452.
 use of, in analysis, A., 720.
 effect of alkyl- and alkylene-thiol groups on therapeutic action of, A., 485.
 of analogous structure, rotational distribution of chromophoric groups in, A., 959.
 with two aromatic nuclei, bromination of, A., 746, 856.
 with two benzene nuclei, Raman spectra of, A., 1301.
 polycyclic. See Polycyclic compounds.
 containing deuterium, preparation of, A., 731.
 high-molecular, A., 736, 965, 1110.
 of high mol. wt., mechanical properties of solutions of, A., 31.
 highly polymerised, A., 604, 610, 611, 728, 730, 740, 745, 965, 1229, 1319.
 structure of, from electron diffraction, A., 687.
 viscosity and molecular form of, A., 730.
 homologous, chemical morphology in, A., 1369.
 long-chain, X-ray diffraction of films of, A., 434.
 homology in, A., 1064.
 molecular, A., 469.
 non-dissociated, study of, by dialysis, A., 1479.
 oxygen-containing, hydrogenation of, B., 54.
 oxygenated, manufacture of, (P.), B., 1085.
 simple, electrolytic dehalogenation of, A., 604.
 of type AB₂, heats of dissociation of, A., 169.
 unsaturated, catalytic reaction of sulphur with, A., 488.
 open-chain, structure of, A., 843.
 analysis of, micro-chemically, by Pregl's method, A., 369.
 by ter Meulen's method, A., 506.
 qualitative analysis of, A., 639, 1140.
 indirect volumetric analysis of, B., 91.
 detection of, by drop reactions, A., 507, 877.
 by mixed m.p., A., 998.
 by spot tests, A., 1483.
 detection in, of antimony, arsenic, and phosphorus, A., 1140.
 of elements, A., 876.
 determination of, titrimetrically, with chromic acid, A., 1390.
 determination in, of bromine and chlorine, A., 101.
 microchemically, A., 1258.
 of carbon, by Robinson's sulphur dioxide method, A., 1258.
 by semi-micro-method, A., 639.
 by wet method, A., 638.
 of carbon and hydrogen, microchemically, A., 1140.
 by semi-micro-method, A., 639.
 of copper, A., 186.
 of germanium, A., 369.
 of halogens, A., 876, 1258.
 of iodine, by Pregl micro-combustion, A., 1515.
 of minimal quantities of organic matter, A., 876.

Organic compounds, determination in, of nitrogen, by Kjeldahl method, A., 876.
by modified Kjeldahl method, A., 1140.
of total nitrogen, microchemically, A., 1140.
of phosphorus, A., 369.
of sulphur, A., 639, 1258.
of thallium, A., 1139.
of unsaturation, microchemically, A., 469.

Organic matter, spontaneous oxidation of, B., 52.
delaying fermentation and putrefaction in, (P.), B., 44.
determination in, of copper, A., 639.

Organisation centre, amphibian, A., 519, 778.

Organisms, unicellular, chemical characteristics and biological behaviour of, A., 534.

Organo-metallic compounds, A., 479.
interchange of heavy atoms in, A., 966.
passage of phenyl radicals from, A., 1139.
Raman spectra of, A., 681.
reactions of, with α -halogenonitroso-compounds, A., 1481.

Organo-metalloidal compounds, formation of, by micro-organisms, A., 738.

Organo-phosphors. See under Phosphors.

Orientation, A., 76.

Orifice meters, constant flow, A., 1342.

***p*-Oresellinic acids**, *mono*- and *di*-bromo-, and their methyl esters, dimethyl ethers, A., 347.

Orthites, in mid-Asiatic rocks, A., 842.

Orthoformic acid, ethyl ester, parachor of, A., 432.

Orthoptera, iron content and oxidation in developing eggs of, A., 238.
effect of oxygen tension on oxygen consumption of eggs of, A., 238.

Orthosiphon stamineus, constituents of leaves of, A., 420.

Oryza saliva. See Straw, rice.

Oryzanin, and its hydrochloride, A., 1428.
as antineuritic vitamin, A., 1175.

Oryzatoxin, A., 415.
in experimental beriberi, A., 1174.

Osazones, A., 1225.
formation of, A., 963.

Osmiridium, X-ray analysis of, A., 440.

Osmium, spectrum of, A., 3.
crystal structure of, A., 1450.

Osmium compounds, colour reactions of, with sulphur organic compounds, A., 332.

Osmium fluoride, low-temperature density of, in carbon tetrafluoride, A., 437.
tetroxide, ultra-violet absorption spectrum of, A., 9.

Osmium determination:—
analysis of, B., 312.

Osmometer, for low pressures, A., 297.
from *Valonia* cells, A., 674.

Osmosis, theory of, A., 1201.
behaviour of solutes in, A., 699.
influence of solutes on rate of, A., 699.
in living cells, A., 1520.

Osmotic pressure, thermodynamics of, A., 169.
kinetic significance of, A., 1201.
and lowering of vapour pressure, A., 579.
of colloids, A., 774.
of colloidal solutions, determination of, A., 466.
of non-electrolytic solutions, A., 1071.
of mixed vapours, A., 1317.

Ossein, liming of, B., 1007.

Osteoblasts, influence of metallic couples on, A., 1021.

Osteoid tissue, calcification in, A., 393.

Osteomalacia, calcium and phosphate metabolism in, A., 1010.
effect of vitamin-D on, A., 517.

Osteoporosis, senile, calcium and phosphorus of bones and blood-serum in, A., 887.

Ostrea gigas, composition of crystalline style of, A., 1398.

Ostrea virginica. See Oysters, American.

Ouabain, poisoning by. See under Poisoning.

Ovalbumin, effect of an electric current on cylinders of, A., 707.
apparent isoelectric point of, A., 301.
cryolysis and diffusion of, A., 932.
adsorption of, at surface of its solutions, A., 819.
adsorption of pepsin by, A., 1025.
effect of carbonic acid on spreading of, on water, A., 161.
coagulation of, by tannic acid, A., 395.
combination of, with tyrosine, A., 506.
hydrolysis of, A., 506.
fixation of arsenic by, in presence of radon, A., 532.
equivalence-point ratio of antibody to antigen in precipitates of, A., 1395.
isoantigenic power of, A., 644.
crystalline, irradiation of solutions of, with α -particles, A., 1022.

Ovary, stimulation of, by adrenal extracts, A., 258.
follicle content of, after hypophysectomy, A., 1426.
action of folliculin on, A., 128.
effect of oestrin on, A., 1425.
functional correlation between anterior pituitary and, A., 1284.
effect of removal of on thyroid activity, A., 1544.
armadillo, effect of antuitrin-S and pituitary extracts on, A., 1032.
monkey's, stimulation of, A., 666.
mouse and rat, reaction of, to hydrogen ions, A., 1414.
rabbit's, pregnant and pseudo-pregnant, lipin content and physiological activity of, A., 645.

Ovary extracts, effect of, on serum-calcium, A., 412.

Ovens, preparation of, from Nernst oxides, A., 1340.
control of temperature of, with valve relays, A., 187.
for baking, roasting, drying, etc., (P.), B., 434, 578.
for pottery, (P.), B., 49.
chamber, (P.), B., 212.
operation of, (P.), B., 87.
vertical, (P.), B., 212.
electric, temperature control of, (P.), B., 29.
Knowles, and its uses, B., 789.
tubular, for conducting reactions in tubes, A., 319.
tunnel, (P.), B., 454, 949.
for cooking, (P.), B., 332.

Overvoltage, A., 171, 707.
theory of, and simultaneous discharge of different ions, A., 450.
in heavy water, A., 1079.
halogen, A., 707.
hydrogen, A., 171, 707.
transitory resistance in, A., 707.
delayed ionic discharge as cause of, A., 707.
of hydrogen isotopes, A., 450.

Ovoflavin c, constitution of, A., 95.

Ovoglobulins, passage of, through the shell membrane of eggs, A., 389.

Ovulation, by gonadotropic extracts, A., 791.

Oxadiazoles, dipole moments of, A., 684.

Oxadiazole ring, structure of, A., 810.

Oxalæmia, blood-carbon monoxide, in, A., 657.
foetal and maternal, A., 103.

Oxalato-compounds, A., 1335.

Oxaldi-3-xanthonylamide, A., 497.

Oxalic acid, preparation of, from sodium formate, A., 961.
production of, from cellulosic agricultural materials, B., 1062.
Raman effect of, A., 807.
oxidation of, by iodic acid, A., 1334.
action of, with iodic acid, A., 587.
with iodine in ethylene glycol, A., 715.
with permanganic acid, in presence of sulphuric acid, A., 1084.
with potassium permanganate, A., 173, 1327.
with sodium sulphate, A., 961.
dihydrate, crystal structure of, A., 152.
and its salts, orientation of oxalate group in, A., 1451.
formation of, by *Aspergillus niger*, A., 124.
effect of various substances on formation of, in the organism, A., 780.
and its salts, fate of, and their toxicity, A., 1160.
in blood, A., 640.
effect of, on acid-base balance, A., 392.
and its salts, physiological action of, A., 246.
poisoning by. See under Poisoning.
activated, deactivation of, A., 588.
spot test for, with aniline, A., 1483.
determination of, photometrically, A., 54.
in blood, A., 390.
in blood, faeces, food, and urine, A., 1269.

Oxalic acid, salts, oxidation of, by halogens in the dark, A., 1207.
long-life intermediate product of action of, with iodine, A., 1090.
photochemical reaction of, with iodine, A., 832.
reaction of, with thionyl chloride and its thermal decomposition products, A., 460.
determination of, with benzidine, A., 949.
calcium salt, fluorescence of, A., 147.
manganese salt, dehydration of, A., 588.
complex manganese mercury silver salt, A., 946.
potassium cobaltic salt, A., 315.
sodium salt, determination of packed cell volume with, A., 1391.
uranyl salt, solutions of, for actinometry, A., 47.

Oxalic acid, esters, condensation of, with β -methyltricarballic ester, A., 861.
cetyl and nonyl esters, A., 730.
ethyl ester, condensation of, with tetrahydrocarvone, A., 755.
reaction of, with ethylenediamine, A., 1106.

Oxalic acid, *diimino*-, *di-o*-anisyl ester, A., 1492.
di-o-hydroxyphenyl ester, A., 1491.

Oxalurhydrazide, A., 869.

Oxalylbiuret, A., 360.

Oxalylidibiuret, A., 360.

β -Oxanois. See $\beta\gamma$ -Oxidopropan- α -ols.

Oxazine dyes, manufacture of, (P.), B., 141, 942.
insoluble, for silk, manufacture of, (P.), B., 718.

Δ^2 -Oxazolines, synthesis of, A., 995.

Oxidase, ascorbic acid, A., 1023.
milk- and muscle-, synergistic action of, A., 1023.

Oxidation, mechanism of, A., 532, 1538.
magnetic investigations of, A., 829.
and ignition at hot surfaces, A., 1327.
with oxygen, A., 1470.
in presence of alcohol-dehydrogenase, A., 658.
anodic, by Eloxal process, B., 681.
biological, A., 121.
chemical aspects of, A., 777.
of carbohydrates and related substances, A., 241.
in the body, effect of acid and alkaline diet on, A., 392.
catalytic. See under Catalytic.
electrolytic. See Electrolytic oxidation.
photochemical. See under Photochemical.
photo-sensitised, importance of metastable conditions in, A., 311.
slow, at high pressures, A., 172.

β -Oxidation, A., 891.

Oxidation-reduction, electron transfer in, in solution, A., 454.
relation of, to phosphorylation, A., 250.
biological, co-enzymes in, A., 1161.
enzymic, A., 121.
intracellular, A., 109.
reversible, optical study of, A., 86.

Oxidation-reduction potential. See under Potential.

Oxides, comparative chemistry of, A., 15.
electron diffraction of films of, on molten metals, A., 18.
X-ray and electron analysis of gels of, A., 162.
action of chlorine on, A., 453.
active, A., 44, 158, 175, 440, 930, 944, 1085, 1204, 1467.
aliphatic, condensations of, with 2-aminopyridine, A., 627, 757.
amorphous and crystalline, A., 946, 1075, 1334.
basic, action of metalloids on, A., 592, 1332.
difficultly fusible, and their hydrates, critical points of, A., 1204.
 α -disubstituted, aliphatic, molecular changes of, A., 194.
fused, metal displacement equilibria in, A., 168.
hydrated, X-ray analysis of, A., 285, 433.
amorphous and crystalline, A., 1075, 1334.
Nernst, preparation of light pencils and ovens from, A., 1340.
organic, dissociable, A., 213, 618, 969, 1233, 1488.

Oxidising agents, specificity of, A., 454.

$\alpha\beta$ -Oxido- β -o-chlorophenylpropiophenone, A., 984.

$\alpha\beta$ -Oxido- β -cyano- $\alpha\gamma$ -diphenylpropane, A., 1124.

$\beta\gamma$ -Oxidodiphenyl-o-chlorophenylpropan- α -ols, A., 984.

$\alpha\beta$ -Oxidohexane, A., 193.

$\gamma\delta$ -Oxido-*n*-hexane- $\alpha\beta$ -tricarboxylic acid, ethyl ester, A., 1106.

1:2-Oxidocyclohexene-1:2-dicarboxylic acid, and its salts, A., 83.

3:6-Oxido-3-methyl-6-isopropyl-4⁴-tetrahydrophthalic anhydride, A., 1245.

$\alpha\beta$ -Oxidopentane, A., 193.

4:5-Oxidophenanthrene, 3-hydroxy-. See Morphenol.

$\alpha\beta$ -Oxido- α -phenylbutyramide, A., 212.

$\beta\gamma$ -Oxidopropan- α -ols, A., 984.

$\alpha\beta$ -Oxidopropionamides, formation of, by action of hydrogen peroxide on $\alpha\beta$ -ethylenic nitriles, A., 212.

Oxido- $\alpha\alpha'$ -propionic acids. See Dilactic acids.

Oximes, catalytic hydrogenation of, A., 1491.

Oximino-ketones, lignins, nitrolignins, and, B., 399.

Oxindole-3:3-dimalonic acid, tetraethyl ester, A., 758.

Oxindolyl-6-acetic acid, A., 759.

Oxonium compounds, A., 982.
quadrivalent oxygen in, A., 286.
acidic, formation of, A., 325.

Oxopyrroporphyrin, A., 1134.
and its derivatives, A., 1135.

Oxotriphenylmethylhydrazide, A., 78.

Oxoyobyrine, and its derivatives, A., 1138.

Oxy-acids, sodium ortho-salts of, A., 591.

***p*-Oxyarsinopimelic acid**, A., 768.

***p*-Oxyarsinosuberanic acid**, A., 768.

Oxygen, electron affinity of, A., 1058.
isotopes, abundance of, in stone meteorites, A., 191.
separation of, A., 590.
fractionation of, in commercial electrolyzers, A., 175.
in exchange reactions, A., 593.
electrolytic concentration of, A., 711, 1329, 1330.
molecules, electronic and vibrational absorption of, A., 1437.
valency angles of, A., 283.
primary and secondary valencies of, A., 286.
covalency angle of, in organic compounds, A., 1056.
occurrence and determination of, in steel, B., 728.
preparation of, from sodium peroxide, A., 51.
laboratory preparation of, A., 1090.
manufacture of substances for generation of, (P.), B., 148.
production of, from liquid air, (P.), B., 767.
for enrichment of air in blast furnaces, B., 898.
from sodium peroxide, A., 181.
electrolytic apparatus for, (P.), B., 910.
pure, for laboratory use, A., 181.
spectrum of, A., 271.
atomic spectrum of, A., 555.
spectral bands of, in the atmosphere, A., 136.
afterglow of, A., 271.
afterglow spectrum of, A., 907.
extreme ultra-violet absorption spectrum of, A., 1437.
Kerr effect in, A., 1192.
ultra-violet wave-length standards for, A., 799.
ions in, A., 5.
energy of formation of negative ions in, A., 1440.
scattering of polonium α -particles by, A., 1048.
magnetic moment of, A., 679.
specific heat and second virial coefficient of, A., 1197.
high-temperature heat capacity of, A., 690.
m.p. of, A., 1197.
apparatus for liquefaction of, A., 1096, 1342.
liquid, electric birefringence of, A., 917.
viscosity of, A., 438, 1064.
solubility of krypton and xenon in, A., 25.

Oxygen, liquid, velocity of sound in, A., 289.
solid, absorption spectrum of, A., 1291.
crystal structure of, A., 1450.
sublimation pressure of, A., 1064.
and its mixtures with nitrogen, inner friction of, in a magnetic field, A., 926.
adsorption of, by charcoal, A., 441.
by phosphorus, A., 181.
by platinum, A., 1068.
by platinum, ferric, and chromium oxides, A., 28.
by pyrocatechol, A., 1458.
by tungsten, A., 1316.
measurement of power of absorption of, A., 640.
diffusion of, in iron, A., 692.
dissolving of, from air bubbles, B., 752.
colloidal, A., 699.
equilibrium of mixtures of, with nitrogen, A., 695.
catalysis of reaction of, with carbon monoxide by platinum oxide, A., 175.
catalysis of action of, with hydrogen, A., 588.
by palladium, A., 43.
relaxation time of vibrational energy in, A., 289.
absorption of sound and nuclear vibrations in, A., 155.
saturation of affinity of, in molecular compounds of alcohols, ethers, ketones, and aldehydes, A., 429.
combustion of mixtures of, with hydrogen, A., 1080.
ignition of mixtures of, with hydrogen, A., 708, 937.
in glow discharge, A., 176.
effect of electric discharge on spontaneous ignition of mixtures of hydrogen and, A., 590.
spark ignition of mixtures of, with hydrogen, A., 1327.
with methane, A., 172.
role of compressor oil in explosions of, B., 269.
ionisation and radiation in explosions of carbon monoxide and, A., 451.
explosion of, with hydrogen, A., 172, 1080.
explosion of mixtures of, with hydrogen and nitrogen, A., 1080.
effect of inert gases on explosion limit of mixtures of phosphine and, A., 307.
electrolytic reduction of, to hydrogen peroxide, A., 942.
reactions with, A., 1470.
kinetics of reactions of, with deuterium and with hydrogen, A., 709.
reaction of, with deuterium, A., 39.
combination of, with deuterium under α -rays, A., 944.
with hydrogen in direct-current discharges, A., 176.
influence of light on reaction of, with hydrogen, A., 457.
effect of lead tetraethyl on reaction of, with hydrogen, A., 42.
action of, with hydrogen in presence of platinum, A., 1085.
surface influence on rate of reaction of, with hydrogen, A., 827.
reaction of, with atomic hydrogen, A., 39.
recombination of, with hydrogen on metal wire in electric discharge, A., 1087.
photochemical reaction of, with hydrogen, A., 46, 831.
with hydrogen and deuterium, A., 46.

Oxygen, photochemical effect of nitrogen peroxide on combination of, with hydrogen, A., 943.
 activation of, by fluorescent dyes, A., 681.
 by irradiated pigments, A., 1087.
 introduction of, into vacua, A., 1218.
 relation of pressure of, to fermentation in anæmia, A., 509.
 deficient acclimatisation to low pressure of, A., 102.
 effects of atmospheres high in, on blood-carbon dioxide and urinary chlorine, A., 370.
 respiratory exchange of, and carbon dioxide during re-breathing, A., 1391.
 diffusion constant and tension balance of, in blood, A., 878.
 solubility of, in red blood-corpuscles, A., 229.
 effect of various substances on uptake of, by rat tissues, A., 119.
 consumption of, by immature rats, A., 370.
 relation between, and nitrogen metabolism, A., 112.
 utilisation of, by limbs in rest and exercise, A., 775.
 effect of tension of, on formation of urine, A., 1148.
 commercial, combustible impurities in, B., 493.
 dissolved, distribution of, in the North Pacific ocean, A., 609.
 from ozone explosion, heat capacity of, A., 1197.
 therapeutic, testing of, B., 1117.
Oxygen fluorides. See Fluorine oxides.
Oxygen detection and determination:—
 detection of, by fluorescence test, A., 595.
 by extinction of phosphorescence, A., 595.
 determination of, B., 724.
 with alkaline solutions of trihydroxy-benzenes and sodium hyposulphite, B., 947.
 in de-aerated boiler-feed water, B., 529.
 with "Mono" gas analyser, B., 60.
 in iron and steel, B., 995.
 in mineral oils, B., 483.
 in steel, B., 410.
 in water, A., 717; B., 928, 1072.
 by Alsterberg and Winkler methods, B., 704.
 with syringe pipettes, B., 528.
iso-Oxygentiobial heptaacetate, A., 330.
Oxyhæmoglobin, effect of concentration of, on light absorption, A., 1517.
Oxyhalides, reaction of, with unsaturated compounds, A., 605.
 compounds of, with unsaturated substances, A., 729.
Oxyimperatorin, A., 986.
Oxypurines, oxidation-reduction equilibria of, A., 450.
Oxytocin, A., 1424.
 chemistry of, A., 790.
 anti-insulin effect of, and vasopressin, A., 543.
 synergism between œstrin and, A., 1425.
Oxytropy, A., 899.
Oysters, iodine content of, A., 377.
 action of vital stains and nitrophenols on respiration of tissues of, A., 245.
 American, rôle of copper in setting and distribution of, A., 119.
Ozokerite, Baikal, B., 1029.
Ozone, molecular structure of, A., 14.
 occurrence of, in Shanghai atmosphere, A., 59.
 in the Arctic night, A., 912.

Ozone, distribution of, in the atmosphere, A., 424.
 in higher atmospheres, A., 600.
 in planetary atmospheres, A., 424.
 and sunspot cycle, A., 59.
 formation of, by alternating-current discharge, A., 1210.
 in oxidation of ferric hydroxides and oxides, A., 1334.
 production of, (P.), B., 992.
 and its therapeutic application, (P.), B., 452.
 generator for, (P.), B., 1142.
 absorption spectrum of, at low temperatures, A., 561.
 at stratosphere temperatures, A., 561.
 infra-red absorption spectrum of, A., 1051.
 liquid, magnetic properties of, A., 814.
 equilibrium of, in the atmosphere, A., 8.
 as oxidising catalyst, A., 1103, 1328.
 catalysis of oxidation of hydrocarbons by, A., 1466.
 blue flame in heated mixtures of nitrogen pentoxide and, A., 593.
 decomposition of, A., 39.
 in aqueous solution, A., 452.
 with water and hydrogen peroxide, A., 582.
 photolysis of, A., 47.
 thermal decomposition of, A., 39, 1080, 1206.
 photochemical reaction of, with chlorine, A., 47, 177.
 effect of, on heliotherapy, A., 1022.
 on metals, A., 41.
 action of, with potassium iodide, A., 945.
 with sulphur dioxide, A., 938.
 drying of paint and varnish films with, B., 913.
 treatment of water with, B., 48.
 purification of water with, B., 176.
 atmospheric, effect of, on biological activity of light, A., 895.
 and its effect on plant growth, A., 1548.
 dry, photolysis of, A., 1330.
 determination of, A., 836.
 photo-electric cell for, A., 465.
 in the atmosphere, A., 1472.
 by fluorescein, A., 1092.
 in dilute mixtures, A., 462.
Ozonisers, (P.), B., 108, 731.

P.

Pachyma hoelen, chemistry of sclerotia of, A., 406.
 β -Pachyman, A., 406.
Pachymoeris acacia, destruction of, B., 969.
Pacific ocean, distribution of dissolved oxygen in, A., 600.
Paddy, fertilisers for, in Bengal, B., 244.
 formation of ammonia in fields of, B., 244.
 control of rats and *Atholia proxima* in fields of, B., 517.
Padi, fertilisers for, B., 198.
 soils for, B., 868.
 determination of p_H of soils in fields of, B., 865.
Padutin. See Callicrein.
Pænanol, 5-nitro-2-hydroxy-, identity of, with 5-nitro-2-hydroxy-4-methoxyacetophenone, and its dimethyl ether, A., 85.
Paints, production of, B., 684, 1151; (P.), B., 33, 466, 1103.
 plant for, B., 509.
 from lithopone, (P.), B., 914.
 pigment problems in, B., 366.
 formula yields in, B., 814.
 hazards in manufacture and use of, B., 959.
 extraction of materials for, by steam distillation, B., 68.
 adhesion of raw materials for, B., 1055.
 mills for, (P.), B., 481, 833.
 filtration of, B., 366.
 driers for, (P.), B., 366.
 soluble driers for, (P.), B., 1004.
 hardening and drying composition for, (P.), B., 367.
 inflammability of gases from heating of, B., 1151.
 mixing of, (P.), B., 642.
 use of polybasic acids and their derivatives in, B., 511.
 anti-oxidants and anti-skinning agents for, B., 366.
 mechanised buhrstone dressing for, B., 160.
 use of diatomite in, B., 319.
 use of colloidal clay in, B., 913.
 inorganic gels for, (P.), B., 189.
 use of mica in, B., 814.
 use of petroleum derivatives in, B., 464.
 petroleum thinners for, B., 109, 836.
 new pigments for, B., 815.
 dispersion of pigments in, B., 32.
 influence of pigments in rubber and, B., 510.
 British colours and pigments for, B., 913.
 blending of colours in, (P.), B., 366.
 non-metallic pigments for, B., 860.
 durability of zinc pigments in, in Southern America, B., 959.
 staining power of pigments in, B., 774.
 separation and floating of pigments in, B., 913.
 colour-binding media for, (P.), B., 735.
 alkyd resins for, (P.), B., 278.
 rubber in, B., 814, 959.
 dissolving of rubber for, (P.), B., 916.
 trade names and composition of softeners for, B., 239.
 use of triethanolamino in, B., 1151.
 vehicles for, (P.), B., 367.
 removers for, B., 1102; (P.), B., 775, 960.
 acidity in, B., 860.
 relation between oil content, particle size, and particle shape in, B., 597.
 effect of mill-scale on rising of, on iron, B., 636.
 composition for treating surfaces for application of, (P.), B., 33.
 treatment of cast tubes, etc., for application of, (P.), B., 680.
 production of mother-of-pearl effects in, (P.), B., 511.
 so-called soap formation in, B., 814.
 sheet materials coated with, (P.), B., 669.
 rôle of surfaces in failure of, B., 365.
 durability of, B., 160, 860.
 in relation to pigments, B., 319.
 effect of atmospheric exposure on, B., 509.
 resistance of, to chemicals, B., 33.
 weathering tests on, B., 815.
 inhibition of mould growth on, B., 160.
 protection of iron from corrosion with, B., 238.
 for protection against chemical warfare gases, etc., B., 417.
 for protection of steel from rust, B., 365.

- Paints, protective action of, against corrosion**
 in sea- and fresh-water, B., 464.
 for use in aeronautics, B., 238.
 for aluminium, B., 277.
 for interior of boilers, B., 1151.
 for cement and concrete, B., 150.
 for duralumin in aeroplanes, B., 194.
 for gas meters, testing of, B., 959.
 for iron, B., 636.
 for iron structures, B., 160.
 for ships, B., 319.
 for steel structures, B., 319.
 for hard wood, B., 598.
 aluminium, leafing of, B., 598.
 uses of, B., 160.
 bituminous, protection of metal structures with, B., 509.
 American, oils for, B., 159.
 anti-fouling, B., 635; (P.), B., 33, 278.
 toxic compounds for, B., 277.
 containing no mercury, B., 509, 734.
 anti-rust, B., 1102; (P.), B., 815.
 bituminous, (P.), B., 775.
 casein, B., 464.
 cement, (P.), B., 456.
 cold-water, for textured walls, (P.), B., 110.
 dry-powdered, production of, (P.), B., 914.
 exterior, B., 238, 815.
 durability of vehicles for, B., 277.
 white, causes of "chalking" of, B., 509.
 flaked pigment, vehicle for, (P.), B., 418.
 house, effects of climate, wood, and priming on, B., 597.
 exterior, primers for, B., 238.
 zinc sulphide and other white pigments for, B., 366.
 durability of, B., 238.
 pigment-vehicle ratio and durability of, B., 238.
 quick-drying, glycerol phthalate resins in, B., 31.
 imitation gold and silver, B., 561.
 interior, zinc sulphide pigments for, B., 598.
 lead, discoloration of, by hydrogen sulphide, B., 160.
 linseed oil, critical oil content of, B., 1004.
 linseed oil-stand oil, critical oil content of, B., 684, 1004.
 luminous, for roads, B., 598.
 metallic, (P.), B., 914.
 oil, production of, (P.), B., 1004.
 viscosity and film properties of, B., 319.
 resistant to yellowing, (P.), B., 815.
 white, durability of, on wood, B., 1004.
 priming, production of, (P.), B., 735.
 conservation of linseed oil in, B., 561.
 for iron, B., 464.
 for metals, B., 598.
 for wood, B., 464, 509.
 for new wood, B., 160.
 protective, for structural steelwork, B., 561.
 for wood and plywood in damp atmospheres, B., 561.
 chlorinated rubber, binding agent for, (P.), B., 1056.
 durability of, B., 1004.
 rust-preventive, B., 464.
 pigments and vehicles for, B., 31.
 use of zinc oxide in, B., 239.
 ships' bottom, B., 160, 319.
 organic compounds for, B., 319.
 under-water, use of bituminous materials in, B., 1054.
 water, (P.), B., 1152.
 white, chalking of, B., 238.
- Paints, zinc oxide, flow tests on, B., 160.**
 weathering of, B., 1004.
 zinc-powder, (P.), B., 642.
 determination of hiding power of, B., 69.
 apparatus for, (P.), B., 1056.
 microscopy of, B., 1151.
 testing of, B., 800.
 apparatus for, (P.), B., 1004.
 with photo-electric cells, B., 510.
 testing and control of, B., 194.
 Dutch specifications and tests for, B., 365, 464.
 analysis of, B., 239, 814.
 luminescence analysis of, B., 1055.
 determination of inorganic constituents of, B., 238.
- Paint films, use of ozone for drying of, B., 913.**
 influence of pigment on weathering of, B., 860.
- Painting, vegetable glues for use in, B., 864.**
 preparation of iron and steel for, B., 1146.
 of aluminium and its alloys, B., 1151.
 of zinc and its alloys, B., 1151.
- Paintings, oil, detection of forgeries in, B., 32.**
- Palladium, isotopes of, A., 1048.**
 and its alloys, strength and annealing of, B., 500.
 hyperfine structure in spectrum of, A., 1437.
 scattering of copper *K*-rays by, A., 272.
 effect of absorbed hydrogen on *X*-ray interference lines of, A., 16.
 tribo- and photo-electric effects for, A., 435.
 and its alloys, magnetic properties of, A., 1063.
 absorption by, of hydrogen, A., 834, 1068.
 permeability of, to hydrogen, A., 928, 1315.
 diffusion of hydrogen in, A., 692.
 electrodiffusion of hydrogen through, A., 1068.
 diffusion of hydrogen and deuterium through, A., 439, 1200.
 occlusion and evolution of hydrogen by, A., 159.
 occlusion of hydrogen in, A., 1315.
 dissociation pressures in system hydrogen and, A., 1322.
 equilibrium of, with its sulphide and sulphur, A., 1322.
 catalysis of hydrogen-oxygen reaction by, A., 43.
 displacement of, by hydrogen from palladium chloride solutions, A., 824.
 quadrivalent, planar configuration of, A., 684.
- Palladium alloys, with cobalt, magnetism of, A., 291.**
 with copper, allotropic of, A., 1065.
 with gold, coloured, B., 771.
 with manganese, A., 576, 1456.
 with silver, containing hydrogen, A., 1456.
 thermo-electric effect with, A., 689.
- Palladium salts, diamagnetism of, A., 573.**
 complex, conductivity of, A., 449.
 isomeric, A., 1214.
- Palladium chloride, paramagnetism of, A., 289.**
 thermal decomposition of, and its chloro-salts, A., 703.
 sulphide, equilibrium of, with palladium and sulphur, A., 1322.
 sulphides, lower, A., 1322.
- Palladium organic compounds, with benzoinoxime, A., 981.**
 with benzylmethylglyoxime, A., 752.
 with thiosemicarbazide, A., 202.
- Palladium detection:—**
 detection of, A., 53.
 spectroscopically, in silver, B., 552.
- Palladium electrodes. See under Electrodes.**
- Palms, oil, manures for, B., 868.**
- Palm oil, composition of, B., 463.**
 continuous refining of, B., 1002.
 solid and liquid components of, B., 859.
 sensitisation of bleaching of, by light, B., 364.
 Brazilian, classification of, B., 364.
 Patana, B., 276.
 red, nutritional properties of, A., 1428.
 Sumatra, properties and composition of, B., 463.
- Palminium iodide, preparation of, from calumba root, A., 99.**
- Palmiche-nut oil, Cuban, B., 276.**
- Palmitic acid, interfacial tension of benzene solutions of, against aqueous solutions of sodium salts, A., 1071.**
 sodium salt, molecular dimensions of, from surface tension measurements, A., 930.
 astacin ester, iodide, A., 346.
 β -*n*-butoxyethyl, α -butylene, $\alpha\beta$ -propylene, and tetramethylene esters, A., 730.
 cetyl ester, dielectric properties of paraffin wax solutions of, A., 916.
 ethyl- and phenyl-mercuric esters, manufacture of, (P.), B., 333.
 fat-soluble azo-dyes from, A., 1232.
- Palmit- α - and β -naphthylamides, and amino-, and nitro-, A., 1232.**
- Palmito-octabromoarachidokephalins, A., 228.**
- Palmito-libromostearokephalins, and their derivatives with mercuric chloride, A., 228.**
- Palmitylvitamin-A, compound of, with dimaleic anhydride, A., 543.**
- Paludism, diagnosis of, by melanin in solution and in suspension, A., 656.**
 flocculation and superflocculation in serum in, A., 385, 650.
 effect of salts on flocculation of serum in, A., 1149.
- Pancreas, changes in, after ligation of the duct, A., 1144.**
 antiglyoxalase action of preparations of, A., 784.
 as blood regulator, A., 666.
 relation of, to hydrolysis in faeces, A., 513.
 effect of feeding lecithin and, on liver-fat, A., 890.
 nucleic acids of, A., 646.
 pentose polynucleotide of, A., 232.
 components of proteinase from, A., 123.
 bovine, zinc content of, A., 788.
 dog's and human, response of, to secretin, A., 538.
 determination in, of lipase, A., 1025.
- Pancreatic extracts, activation of, by acidification, A., 123.**
- Pancreatic juice, elimination of dyes in, A., 1006.**
 physiological variation of, A., 127.
 activation of, by calcium, A., 897.
 by enterokinase, A., 123.
- Pancreatin, action of, on caseinogen and gelatin, A., 252.**
- Pancreatitis, blood-amylase in, A., 517.**
 lipase and esterase in blood-serum in, A., 1402.

- Panope generosa*, oxidase in crystalline style of, A., 1398.
- P'an-shia, composition of, B., 1164.
- Pantothenic acid in nodule bacteria, A., 1167.
- as growth stimulant for plants, A., 1548.
- in animal tissues, A., 772.
- carbohydrate nature of, A., 408.
- growth-promoting action of, A., 124.
- Papain, thiol nature of, A., 1025.
- activation of, A., 252.
- and its use in determination of physiologically active substances in blood, A., 123.
- natural activators of, A., 1163.
- activation and inhibition of, A., 1538.
- by potassium ferrocyanide, A., 1279.
- effect of arsenicals on, A., 897.
- action of dyes and narcotics on, A., 784.
- effect of oxidising and reducing agents on activity of, A., 784.
- specificity of, A., 1416.
- assay of, B., 695.
- detection of enzymes of type of, A., 784.
- Papaverine, photochemistry of, A., 990.
- photo-oxidation of, A., 366.
- derivatives, effect of, on excised intestine, A., 528.
- hydrochloride, detection of morphine in, with iodic acid, A., 769.
- phenylethylbarbiturate. See Pavemal.
- synthesis of quiazoline derivative related to, A., 1134.
- effect of, on blood-sugar, A., 642.
- on blood-sugar of rabbits, A., 1156.
- Paper, internal structure of, B., 845.
- fibre orientation in, B., 222.
- formation of, on the Fourdrinier wire, B., 222, 943.
- apparatus for formation measurement of, B., 846.
- manufacture of, (P.), B., 58, 97, 223, 266, 352, 491, 668, 669, 721, 897, 1089, 1139.
- hydration theories of, B., 845.
- raw materials for, B., 446.
- morphology of cellulose fibres in relation to, B., 1136.
- from cotton stems, B., 446.
- from maize leaves and stalks, B., 942.
- from Finnish peat, B., 489.
- use of wood of *Pinus insignis* in, B., 1039.
- from *Pinus radiata*, B., 489.
- use of rice-straw in, B., 845.
- use of titanium pigments in, B., 959.
- Brazilian vegetable fibres for, B., 1136.
- viscose products for, (P.), B., 1089.
- wood for, B., 308.
- from coniferous woods of Southern Rhodesia, B., 57.
- corrosion-resistant alloys for, B., 27.
- nickel alloys for, B., 446.
- high-pressure boilers for, B., 719.
- metals for plant for, B., 153.
- Fourdrinier machine for, (P.), B., 185.
- pigments for, B., 447.
- wet-spinning waste for, (P.), B., 97.
- water for, B., 265.
- nature of colloidal water in, B., 447.
- chemistry of, B., 943.
- chemical control in, B., 58.
- comparative merits of beating and jordaning in, B., 764.
- recovery of organic constituents from black liquor from, (P.), B., 669.
- surface phenomena in, B., 845.
- fibre-water relation in, B., 447.
- flocculation in, B., 399.
- adverse action of gases in, B., 399.
- Paper, treatment of, (P.), B., 266.
- to render it pliable, (P.), B., 301.
- treatment of webs of, (P.), B., 765.
- impurities in, B., 623.
- discoloration of, in contact with coloured rubber goods, B., 512.
- removal of printing ink from, (P.), B., 541, 897.
- coating of, (P.), B., 278, 352.
- with metals, (P.), B., 1099.
- with varnishes, lacquers, waterproofing solutions, etc., (P.), B., 816.
- composition for, (P.), B., 466.
- materials for, (P.), B., 144, 541.
- plasticiser for, (P.), B., 1153.
- compositions for coating and impregnation of, (P.), B., 18, 1153.
- dryers for, (P.), B., 224.
- effect of dryer drainage on drying of, B., 1136.
- drying of pulp and, B., 1088.
- dyeing of. See under Dyeing.
- retention of fillers in, B., 1088.
- impregnation of, for insulation of electric cables, (P.), B., 624.
- oil-proofing of, (P.), B., 511.
- printing of. See under Printing.
- sizes for, (P.), B., 223, 368.
- from hydrocarbons, (P.), B., 394.
- sizing of, (P.), B., 401, 669.
- by Bennett process, B., 587.
- by Delthirna process, B., 222.
- by Gillet process, B., 447.
- and capillary flow, B., 490.
- sizing of hand-made laboratory sheets of, B., 845.
- effect of hydration of vegetable fibres during beating on strength of, B., 1039.
- beater furnish for, (P.), B., 401.
- beater sizing of, B., 299.
- use of potato starch for, B., 1039.
- Bewoid rosin-size process for, B., 143.
- specification for wax size for, B., 143.
- wetting and degree of sizing of, B., 845.
- surface application of titanium pigments to, B., 222.
- composition for waxing of, (P.), B., 18.
- grease- and water-proofing of, (P.), B., 944.
- waterproofing of, (P.), B., 185, 354, 799.
- composition for, (P.), B., 1139.
- optical properties of, B., 490, 1136.
- brightness of, B., 490, 943.
- apparatus for determination of brightness of, B., 846.
- reflexion measurements on, B., 764.
- relation of reflectance and opacity of, to thickness, B., 845.
- effect of china clay on opacity of, B., 143.
- fastness to light of dyes on, B., 222.
- determination of whiteness of, B., 719.
- permanence of, in sunlight, B., 667.
- electrical properties of, B., 1148.
- influence of aluminium sulphate on retention of kaolin by, B., 58.
- lateral porosity of, B., 222.
- penetration of, by oils and varnishes, B., 1040.
- transmission of water vapour through, B., 943.
- water-absorbency tester for, B., 400.
- water-resistance of, B., 491.
- measurement of, with ultra-violet light, B., 17.
- production of laminated articles from, (P.), B., 111.
- vegetable glues for, B., 864.
- maturing of, (P.), B., 1041.
- testing of, B., 943.
- Paper, evaluation of printing quality of, B., 400, 490.
- relation of smoothness and plane porosity to printing qualities of, B., 719.
- register of, in printing, B., 223.
- receptivity of, for printing ink, B., 798.
- strength and stability of, from cotton rags, B., 845.
- role of structure of cellulose fibres in strength of, B., 399.
- breaking length and stretch of, B., 222.
- Bekk smoothness tester for, B., 17.
- determination of rigidity, stiffness, and softness of, B., 490.
- testing of stiffness of, B., 623.
- effect of ink on deterioration of, B., 774.
- accelerated ageing tests for determination of permanence of, B., 16.
- testing of non-fibrous materials for, B., 587.
- microscopical examination of, B., 143.
- Berlin tests on microscopy of, B., 588.
- testing of bacterial permeability of, B., 720.
- detection of artificial watermarks in, with ultra-violet light, B., 17.
- determination in, of starch, B., 447.
- of wood pulp, by Roe's chlorine number, B., 400.
- of chemical and mechanical wood pulp, B., 986.
- Paper, absorbent, production of, (P.), B., 1089.
- bread-wrapping, pseudo-salicylic acid reaction for testing of, B., 491.
- cable, determination of twisting of, B., 143.
- carbon, manufacture of, (P.), B., 491.
- coated, production of, (P.), B., 18, 988.
- testing and classification of, B., 540.
- composite, manufacture of, (P.), B., 18.
- copying, use of jute rags in, B., 489.
- dye pastes for, (P.), B., 15.
- corrugated, manufacture of, (P.), B., 1041.
- crêpe, waterproof, manufacture of, (P.), B., 799.
- decalcomania, (P.), B., 97.
- emery. See Emery paper.
- fine, use of white-water in manufacture of, B., 399.
- grease- and water-proof, manufacture of, (P.), B., 799.
- hardened, production, properties, and processing of, B., 447.
- heat-insulating, manufacture of, (P.), B., 721.
- impervious, manufacture of, (P.), B., 588.
- impregnated, manufacture of, (P.), B., 669.
- kraft, production of, for corrugated board boxes, B., 400.
- laminated, manufacture of, (P.), B., 1139.
- lime half-stuff, properties of, B., 142.
- metal-coated, printing on, B., 943.
- mica-covered, production of, (P.), B., 625.
- mottled, spraying apparatus for production of, (P.), B., 625.
- multi-ply, manufacture of, (P.), B., 352.
- newsprint, use of white-water in manufacture of, B., 399.
- from 100% groundwood, B., 1039.
- testing of printing quality of, B., 1039.
- testing of, for smoothness, ink penetration, and opacity, B., 400.
- determination in, of cellulose, B., 541.
- offset, expansion and treatment of, B., 1040.
- parchment, physical properties of, B., 491.

- Paper**, printed, recovery of pulp from, (P.), B., 846.
 purification of wastes from de-inking of, (P.), B., 1005.
 printing, manufacture of, (P.), B., 491.
 static electricity in, B., 943.
 three-ply, manufacture of, (P.), B., 448.
 rag, use of seed-flax pulp in, B., 222.
 safety, (P.), B., 1041.
 manufacture of, (P.), B., 267, 352.
 stencil. See Stencil paper.
 tracing, production of, (P.), B., 267.
 translucent, treatment of, (P.), B., 625.
 transparent, B., 986.
 uncoated, printing of half-tones on, B., 943.
 wall-. See Wallpaper.
 waste, recovery of fibre from, (P.), B., 1139.
 refining of, with sludge from causticising of green liquors, B., 490.
 decolorisation of, B., 143.
 waterproofing, manufacture of, (P.), B., 223, 990, 1139.
 water-repellant, manufacture of, (P.), B., 669, 1089.
 wrapping, for foods, (P.), B., 266.
Paper board, manufacture of, (P.), B., 897.
 parchmentisation and properties of, B., 667.
 control of drying of, by electrical resistance, B., 764.
 sizing of, by Delthirna process, B., 222.
 transmission of water vapour through, B., 943.
 multi-ply, manufacture of, (P.), B., 352.
 waterproof, manufacture of, (P.), B., 990.
Paper fibres, application of rubber to, B., 143.
Paper machines, heat transfer through dryer shells of, B., 222.
 materials for Fourdrinier wires of, B., 272.
 felts in, B., 798.
 cleaning materials for, B., 719.
Paper mills, Toledo beater control for, B., 719.
 feeding of black liquor from, to smelting furnaces, (P.), B., 1041.
 pitch problems in, B., 447.
 steam accumulators in, B., 942.
 effect of wastes from, on fish, B., 928.
 treatment of wastes from, (P.), B., 1072.
 treatment of water for, B., 976.
 white-water losses in, B., 1088.
Paper pulp, manufacture of, (P.), B., 301, 624.
 apparatus for, (P.), B., 491.
 treatment of, (P.), B., 448.
 removal of liquid from, (P.), B., 482.
 beating of, in rod mills, B., 489.
 bleaching of. See under Bleaching.
 drying of paper and, B., 1088.
 grinding apparatus for, (P.), B., 882.
 freeness tester for, (P.), B., 541.
 anaerobic decomposition of sulphite waste liquor from, by bacteria of sea-bottom mud, B., 752.
 determination in, of chemical and mechanical wood pulp, B., 986.
Paper stock, effects of refining in production of, B., 719.
 refining of, B., 58.
 properties of, B., 399.
 antiseptic value of zinc pigments for, B., 184.
Paprika, colouring matters of, A., 495.
Paprika plants, sugar content of pods of, A., 1435.
Parabanic acid, action of hydrazine on, A., 869.
Paraberine, synthesis of, A., 94.
Parachor, A., 918.
 interpretation of, A., 283.
 additivity of, A., 1059.
 and constitution, A., 283, 1059, 1306.
 and entropy of metals, A., 934.
 of polycyclic compounds, A., 15.
Paraffin. See Paraffin oil.
Paraffins, formation of, by hydrogenation of cyclopentane homologues, A., 1357.
 preparation of, by Sabatier-Senderens process, A., 324.
 measurement of viscosity of, A., 728.
 reaction of, with olefines, A., 1348.
 isomeric, Raman spectra of, A., 428.
Paraffin oil, manufacture of, B., 259.
 from German crude petroleum, B., 392.
 refining of, with ferric sulphate, B., 133.
 purity of, B., 7.
 correlation of structure and plastic properties of, B., 257.
 extraction of residues after bleaching of, B., 7.
 emulsions, production of, (P.), B., 760.
 stabilised by soap, B., 212.
 X-ray diffraction of films of, A., 18.
 formation of hydroxy-acids by atmospheric oxidation of, A., 196.
 action of atomic hydrogen on, A., 730.
 medicinal, sulphuric acid test for, B., 205.
 Polish, for internal use, B., 828.
 determination of vapour of, in air, B., 710.
 determination of, in asphalt, B., 1028.
 in mineral oils, B., 391.
 in asphaltic mineral oils, B., 886.
 in mixtures with oil, B., 710.
Paraffin wax, manufacture of, B., 259, 536.
 and lubricating oils, (P.), B., 346.
 theory of sweating of, B., 133.
 stabilisation of, (P.), B., 346.
 tensile strength and density of, B., 615.
 light-sensitivity of, B., 133.
 determination of colour and light-sensitivity of, B., 133.
 conductivity of, A., 915.
 electrical conductivity of, near m.p., B., 660.
 chlorination of, (P.), B., 90.
 manufacture of polymerisation products of, (P.), B., 13.
 utilisation of, B., 342.
Paralysis, ultra-violet absorption spectrum of cerebrospinal fluid in, A., 1399.
 serum-polypeptides in, A., 644.
 changes in serum-proteins in, A., 109.
 general, polypeptidorachia in, A., 776.
Paramagnetic crystals, and their solutions, colour of, A., 1051.
 ions. See under Ions.
 salts, adiabatic demagnetisation of, A., 689.
 substances, constitution of, A., 814.
 properties of, A., 814.
Paramæcium, effect of ultra-violet light on, A., 782.
 effect of drugs on colloidal changes in, A., 1539.
Paramæcium caudatum, effect of rays on reproduction of, A., 1539.
Paramorphan. See Dihydromorphine.
Parasepiolite, fibrous, dehydration of, A., 323.
Parasites, nematode, resistance of chickens to, A., 384.
Parasitides, (P.), B., 79.
Parathormone, A., 409.
 action of, A., 1423.
Parathormone, effect of, in rats, A., 1543.
 on basal metabolism of dogs, A., 539.
 on blood-calcium, A., 258.
 on blood-phosphorus, A., 539.
 on calcium and phosphorus in serum and on composition of bones, A., 409.
 on glycæmia in diabetes, A., 1269.
 on neuro-muscular system, A., 1423.
 on oxalic acid poisoning, A., 127.
 on phosphorus excretion in urine, A., 258.
 on serum-calcium in pigeons, A., 789.
 effect of hypercalcaemia from, on cerebral cortex, A., 539.
 evaluation of, with sodium fluoride, A., 789.
 standardisation of, with rabbits, A., 1171.
 assay of, with magnesium sulphate, A., 539.
Parathyroids, physiology of, A., 900.
 physiological action of, in relation to vitamin-D, A., 1423.
 hormone from. See Parathormone.
Parathyroid extracts, changes in tissues due to, A., 670.
 effect of, on carbohydrate metabolism, A., 1285.
 on gastric secretion, A., 789.
Parchment, vegetable, for wrapping foods, B., 16.
Parinarium laurinum and *macrophyllum*, unsaturated acids of kernels of, A., 1041.
Paris green, larvicidal action of, B., 528.
 use of, in Indo-China, B., 528.
Parmelia acetabulum, norstictic acid in, A., 905.
Parmelia furfuracea, constituents of, A., 1432.
Parmelia perlata, constituents of, A., 749.
Particles, charged, formation of positive and negative electrons by, A., 1439.
 cosmic, absorption of, in copper and lead, A., 278.
 elementary, theory of, A., 1442.
 constitution of nuclear forces and, A., 143.
 thermal equilibrium of, A., 679.
 fast, emission of, A., 1442.
 charged, pair creation by, A., 1187.
 heavy, collisions of, A., 1442.
 high-velocity, in vacuum arc, A., 801.
 ionising, Greinacher hydraulic counter for quanta and, A., 466.
 small, determination of numbers of, from Debye-Scherrer photographs, A., 570.
 α -Particles. See α -Rays.
 β -Particles. See β -Rays.
H-Particles, absorption of, A., 275.
 Bragg curve of, A., 1047.
 photographic detection of, A., 1468.
Partridges, poisoning of. See under Poisoning.
Parturition, serum-calcium and -magnesium in, A., 385.
Paschen-Back effect, A., 137.
Paschen's law, at low striking potentials, A., 1438.
Passer montanus, changes in blood of, during growth, A., 372.
Passion fruit, products from, B., 698.
Passivation, theory of, A., 306.
Passivity, A., 1326.
 theory of, A., 1079.
 anodic, A., 39, 585.
 cathodic, A., 451.
Pastes, drying apparatus for, (P.), B., 289.
Pasteboard, production of patterned sheet materials from, (P.), B., 18.

- Pasteur effect, A., 1013.
inhibition of, by phenosafranine, A., 777.
- Pasteurisation apparatus, (P.), B., 44, 787, 882.
heat-resistant bacteria in milk in, B., 1066.
for bottled goods, (P.), B., 782.
for liquids, (P.), B., 51.
- Pastry, egg content of, B., 570.
determination in, of fat, by acid method, B., 570.
- Pastures, fertilisation and rotation management of, B., 245.
fertilisation of, for steer grazing, B., 73.
fertilisers for, B., 248.
in New Jersey, B., 245.
manuring of, in East Prussia, B., 1109.
recovery of nitrogen from, under nitrogenous fertilisers, B., 166.
composition of plants of, at flowering and maturity, B., 1061.
nutritive value of, B., 44.
nutrient value of herbage of, B., 245.
effect of artificial drying on digestibility and availability of nutrients in, B., 653.
monthly composition of, B., 919.
iron content of, A., 553.
use of legumes in, B., 919.
Longleaf 1927—1931 experiments on, B., 689.
high-moor, manuring of, with nitrogen, B., 1060.
lowland, effect of manuring on composition of, under grazing and hay conditions, B., 167.
mountain, Western Carpathian, effect of manuring on intake of minerals by, B., 968.
natural, response of, to superphosphates, B., 167.
natural hill, effect of controlled grazing and manuring on, B., 167.
N.S.W., analyses of, B., 605.
on upland soils, fertilisers for, B., 373.
- Patchouli oil, Seychelles, B., 524, 654.
- Patents, physico-chemical, laws of, B., 977.
- Patina, green, and basic copper carbonate, A., 49.
- Pavement, A., 1388.
- Pavements, bituminous surfaces for, (P.), B., 675.
rubber materials for, (P.), B., 150.
cold-laid, manufacture of, (P.), B., 632.
waterproof, manufacture of, (P.), B., 806.
- Paving compositions, bituminous, low-temperature properties of, B., 950.
- Paving materials, manufacture of, (P.), B., 769, 1097.
bituminous, testing of, (P.), B., 903.
light-coloured, (P.), B., 1144.
cold-mix, manufacture of, (P.), B., 727.
flexible, manufacture of, (P.), B., 358.
- Peas, utilisation of phosphate fertilisers by mixed sowings of oats, lupins, and, B., 966.
loss of soluble constituents in blanching of, B., 250.
dehydrogenase of, A., 1277.
stachyose from, A., 1550.
marsh-spot disease of, B., 1011.
chemical composition of, from plants with root-rot, A., 554.
effects of calcium cyanamide and formalin on "sickness" of, B., 822.
Alaska, non-protein-nitrogen in, A., 269.
organic compounds in, A., 1041.
canned, maturity of, B., 250.
cow, globulins of, A., 1181.
embryo, nucleic acid and nucleo-proteins of, A., 422.
- Peas, germinating, co-enzyme, Z-factor and flavin in, A., 1165.
pigeon, control of insect pests of, B., 246.
- Peaches, arsenical injury of, B., 1062.
- Peach trees, effect of temperature on growth and metabolism of roots of, A., 1178.
biochemistry of, A., 906.
chlorosis of, B., 471.
summer contact sprays for, B., 742.
use of zinc sulphate in sprays for, B., 568.
nitrogenous fractions in vegetative tissues of, A., 905.
Elberta, effect of temperature on growth and metabolism of, A., 419.
nursery stock and orchard, control of borers on, B., 247.
- Peanuts, casein from, B., 875.
- Peanut oil, alcohol extraction of, B., 318.
catalytic conversion of, into light mineral oils, B., 660.
- Peanut plants, nodulation of, B., 689.
- Pears, influence of moisture in heavy soils on rate of growth of, B., 918.
constituents of waxy coating of, A., 1434.
vitamins in, A., 414.
avocado, control of *Dothionella* rot of, B., 1158.
Bartlett, fertilisers for, B., 422.
- Pear trees, chlorosis of, B., 1011.
control of borers on, B., 247.
control of scab of, by spraying, B., 247.
- Pearlite, lamellar, structure and formation of, B., 633.
containing silicon, composition and critical temperature of, B., 152.
- Peat, drying of, B., 611.
coking of, B., 1079.
distillation of, apparatus for, (P.), B., 1073.
retorts for, (P.), B., 890.
production of acetic acid and phenols in, B., 6.
distillation and extraction of, B., 483.
influence of composting on changes in, B., 165.
plasticity and viscosity of, A., 932.
chemical properties of, B., 1107.
and its constituents, thermal decomposition of, B., 436.
destructive hydrogenation of, B., 437.
effect of ammonia and chlorine on organic constituents of, B., 324.
utilisation of, B., 706.
production of ethylene from carbonisation products of, B., 6.
production of fertilisers from, (P.), B., 517.
humic acids from, B., 533.
biginisation and oxidation of humic acids from, B., 791.
production of tanning materials from, B., 419.
ammoniated, nitrogenous fertilisers from, B., 602.
Finnish, manufacture of paper or pulp from, B., 489.
Irish, chemistry of, B., 85.
low-moor, soluble humus of, B., 372.
Matagan boghead, coking properties of, B., 437.
determination in, of humic acids, B., 52.
- Peat oil, refining of, with alcohol, B., 211.
- Pecan nuts, growth and composition of, A., 904.
effect of temperature, humidity, and ammonia on, B., 379.
effects of pruning and fertilisers on, B., 166.
- Pecan nuts, polishing, bleaching, and dyeing of, B., 379.
- Pecan rosette, control of, with zinc sulphate, B., 74.
- Pecan trees, effect of nitrogen on growth of, B., 422.
fertilisers for, B., 373.
injury of, by Bordeaux mixture, B., 74.
control of black aphid on, B., 74.
- Pectenoxanthin, constitution of, A., 233.
- Pectin, A., 32; B., 378.
production of, from sugar beets, (P.), B., 969.
extraction of, (P.), B., 876.
optimum conditions for, B., 1162.
from apple pomace, B., 1020.
colloidal properties of, A., 702.
theory of formation of jellies of, A., 32.
refractive index of hydrosols of, A., 933.
hydrate, preparation of, B., 331.
role of, in manufacture of cider, B., 824.
manufacture of food products from, (P.), B., 1163.
manufacture of pressed preparations of, (P.), B., 923.
in beetroots, B., 648.
acid-free, use of, in imitation leather, B., 798.
apple, viscosity of, B., 605.
addition of, to milk, B., 426.
apple-pulp, effect of sulphur dioxide on, B., 698.
commercial, comparison of, B., 1116.
dried, manufacture of, (P.), B., 782.
detection of, in hops, B., 779.
- Pectolite, A., 843.
- Pegadiene, A., 873.
- Peganine, constitution of, A., 635.
identity of vasicine with, A., 365.
See also Vasicine.
- Pegmatites, age and distribution of, A., 726.
at Collins Hill, Connecticut, A., 1346.
Colorado, A., 1100.
of Fitchburg, Massachusetts, A., 323.
from Masul, A., 602.
from Sheahan Quarry, Missouri, A., 842.
- "Pektolaetonsäure," Ehrlich's, polygalacturonic acid methylglucosides from, A., 732.
- "Pektolsäure," Ehrlich's, polygalacturonic acid methylglucosides from, A., 732.
- ψ -Pelargonidin *pentaacetates*, A., 867.
- Pellagra, production of, on diet deficient in vitamin-B₂, A., 1175.
blood-glutathione in, A., 887.
- ψ -Pelleterine, synthesis of, under physiological conditions, A., 873.
- Peltier effect, lecture demonstration of, A., 840.
and entropy, A., 20.
- Pelogyne *porphyrocardia*, constituents of, A., 985.
- Pelogyne, and its derivatives, A., 985.
- Pens, gold, points for tips of, (P.), B., 638.
- Pencils, manufacture of, (P.), B., 110.
manufacture of lead for, (P.), B., 735.
lead, manufacture of, (P.), B., 1103.
- Penetration, kinetics of, A., 42, 1289.
- Penicillium, yellow pigment from metabolism of species of, A., 786.
- Penicillium aurantiobrunneum*, lipins of, A., 535.
- Penicillium brevicaulis*, production of trimethylarsine by, A., 1027.
- Penicillium brevicompactum* and *cyclopium*, production of *i*-erythritol by, A., 1028.
- Penicillium Charlesii*, metabolic products of, A., 327, 662, 898.

- Penicillium Charlesii*, absorption spectra of metabolic acids of, A., 1106.
 synthesis of mannocarlose from glucose by, A., 477.
- Penicillium crustaceum*, influence of iron on gluconic fermentation by, A., 1166.
- Penicillium digitatum*, action of, on vitamin-C, A., 1036.
- Penicillium javanicum*, cultivation of, in large-scale laboratory apparatus, A., 662.
 production of fat by, A., 535.
- Penicillium rubrum*, properties of bacterial inhibitory substance from, A., 662.
- Penta-acetyl- μ -fructose, optical cancellation in, A., 809.
- Penta-acetyl-leucoboletols, A., 347.
- Pentacarboxyaines, A., 634.
- Pentacarboxyanine dyes, unsymmetrical, manufacture of, (P.), B., 1037.
- Pentadecamethyleneimine, A., 868.
- Pentadecanecarboxylic acids, ethyl esters, A., 1481.
- Pentadecodilactone, ν -hydroxy-, A., 1351.
 X-hydroxy-, A., 1351.
- Pentadecic acid, ξ -amino-, and its salts and ethyl ester, A., 478.
- Pentadecolactone, ν -hydroxy-, A., 65, 1351.
 χ -hydroxy-, A., 1351.
- Pentadecotrilactone, χ -hydroxy-, A., 1351.
- 3-*n*-Pentadecylbenzoic acid, 2-hydroxy-. See Tetrahydroanacardic acid.
- Pentadecylcarbinols, A., 1481.
- Pentadeutero benzene, Raman spectrum of, A., 806.
- cyclo*Pentadiene, thermal polymerisation of, A., 203.
 addition of maleic anhydride to, and isomerism of the adducts, A., 211.
 reactions of, A., 341.
 thermochemistry and kinetics of reaction of, with benzoquinone, A., 938.
- $\Delta^{\alpha\gamma}$ -Pentadienonitrile, and its polymerides, A., 1480.
- (γ -*cyclo*Pentadienylidene- Δ^{α} -butenyl)trimethyl- Δ^1 -*cyclo*hexenes, A., 203.
- κ -*cyclo*Pentadienylidene- β [(dimethyl- $\Delta^{\beta\delta}$ -undecatriene, A., 203).
- Pentaerythritol tetranitrate, manufacture of, B., 663.
 properties of, B., 334.
 analysis of mixtures of, with trinitrotoluene, B., 335.
- tetraphenyl ether, crystal structure of, A., 1195.
- Pentaethylpentarsine, A., 603.
- $\alpha\gamma\delta$ -Pentaketodecic acid, and its ethyl ester, A., 733.
- Pentakisazo-dyes, for leather, manufacture of, (P.), B., 717.
- Pentalupine, A., 97.
- Pentamethinecyanines, synthesis of, A., 223.
- 3:4:5:6- ω -Pentamethoxyacetophenone, 2-hydroxy-, A., 91.
- 4:2':3':4':6'-Pentamethoxychalkone, A., 1500.
- Pentamethoxyethoxyacetophenone, A., 91.
- Pentamethoxyphenylglyoxylic acid, A., 91.
- 6:7:3':4':5'-Pentamethoxy-1-phenylisoquinoline, and its hydrochloride, (P.), B., 478.
- Pentamethylbenzene, nitration of, A., 1114.
- 2:4:5:6:7-Pentamethylbenzimidazole, and its salts, A., 1114.
- Pentamethylisocatechins, A., 867.
- cyclo*Pentamethylenochloroarsine, and its derivatives, A., 637.
- $\beta\beta\epsilon\zeta$ -Pentamethyl- γ -ethyl- Δ^{δ} -*n*-hepten- γ -ol, A., 847.
- Pentamethylgarcinol hydrate, A., 220.
- $\beta\beta\epsilon\zeta$ -Pentamethylheptan- γ -ol, A., 476.
- $\beta\beta\epsilon\zeta$ -Pentamethyl- Δ^{δ} -hepten- γ -one derivatives, A., 476.
- cyclo*Pentaldehyde, and its dimedone derivative, A., 751.
- Pentane, molecular vibration of, A., 917.
 synthesis of, A., 352.
 electric moment of, A., 567.
 thermodynamic properties of, A., 290.
 rate of combustion of mixtures of, with oxygen, A., 1081.
 photochlorination of, A., 1332.
 thermal decomposition of, A., 1348.
 electrolytic reduction of methyl *n*-propyl ketone to, A., 310.
 hydrogenation of homologues of, with ring-fission, A., 1357.
- Pentane, α -amino- δ -hydroxy-, and its hydrochloride, A., 70.
- $\alpha\epsilon$ -dibromo-, A., 844.
- $\alpha\gamma\epsilon$ -tribromo-, A., 844.
- n*- and *iso*-Pentanes; chlorides of, analysis of mixtures of, A., 1103.
- cyclo*Pentane derivatives, action of selenium and palladised charcoal on, at high temperatures, A., 738.
- n*-Pentane- α -arsinic acid, dissociation constants of, A., 446.
- n*-Pentane- α -arsinic acids, γ -chloro-, A., 333.
- trans-cyclo*Pentane-1-carboxylic-2-acetoacetic acid, ethyl ester, A., 1239.
- cyclo*Pentanediacetic acid, A., 1361.
- cis-cyclo*Pentane-1:2-diacetic acid, A., 208.
- trans-cyclo*Pentane-1:2-diacetic acids, and their brucine salts, A., 1240.
- cyclo*Pentane-1:2-diacetic acids, and their mono- and di-anilides, A., 211.
- $\alpha\epsilon$ -Pentanediarisnic acid, A., 333.
- cyclo*Pentanedicarboxylic acid, esters, hydrolysis of, A., 1465.
- cyclo*Pentane-1:3-dicarboxylic acid, and its methyl ester and acid chloride, A., 1245.
- cyclo*Pentanedicarboxylic acids, dissociation constants of, A., 1076.
- d*- and *l*-Pentane- $\alpha\beta$ -diol di(phenylcarbamates), A., 193.
- trans-cyclo*Pentane-1:2-diol, resolution of, A., 209.
- n*-Pentane- $\alpha\alpha$ -disulphonic acid, barium salt, phenyl ester, and di(ethylanilide) of, A., 472.
- n*-Pentanehexacarboxylic acid, hexamethyl ester, A., 475.
- cyclo*Pentane- β -propionic acid, and its ethyl ester and derivatives, A., 1240.
- Pentanesulphonic acid, tertiary, A., 471.
- n*-Pentanetetracarboxylic acid, and its barium salt and tetramethyl ester, A., 475.
- n*-Pentane- $\alpha\gamma\epsilon$ -triol, and its phenylurethane, A., 844.
- Pentan- β -ol, esters of, A., 340.
- cyclo*Pentanol, *trans*-2-chloro, A., 616.
- cyclo*Pentanol-1:2-diacetic acid, and its lactone, A., 750.
- cyclo*Pentanol-2- β -propionic acid, lactone of, A., 1497.
- Pentan- β -one, α -hydroxy-, 2:4-dinitrophenylhydrazones, A., 193.
- cyclo*Pentanone, A., 1377.
- m*-nitrobenzhydrazido and 2:4-dinitrophenylhydrazones, A., 743.
- cyclo*Pentanone, 2-chloro-, reaction of, with Grignard reagents, A., 979.
- Pentanone-2-carboxylic acid, ethyl ester, sodium derivative, reaction of, with alkyl halides, A., 342.
- cyclo*Pentanone-2-carboxymethylanilide, (P.), B., 1133.
- Pentaphenylbenzene, bromo-, A., 968.
- 2:3:4:5:6-Pentaphenylbenzil, A., 967.
- Pentaphenylbenzoic acid, and its methyl ester, A., 213.
- Pentaphenylethyl, electron affinity of, A., 1188.
- 2:3:4:5:6-Pentaphenyltolan, A., 967.
- Pentaxanthin, A., 1145.
- Pentenes, polymerisation of, A., 325.
- Δ^{β} -Pentene, β - and γ -bromo-, A., 1105.
- cyclo*Pentene derivatives, Raman spectra of, A., 146.
- Δ^1 -*cyclo*Pentene, 1-cyano-, A., 1496.
- Δ^1 -*cyclo*Pentene-1-carboxylic acid, 2-chloro-, and its ethyl ester, A., 1497.
- Δ^{α} -Pentenoamide, A., 1228.
- Δ^{β} -Pentenoic acid, δ -chloro-, ethyl ester, A., 1480.
- Δ^{γ} -Pentenoic acid, $\alpha\gamma\delta$ -tri-amino-, hydrochloride, A., 850.
- Δ^{δ} -Penten- α -ol, preparation of, A., 866.
- 1:2-*cyclo*Pentenophenanthrene, synthesis of, A., 1117.
- cyclo*Pentenopyrroles, A., 870.
- 2- Δ^{γ} -Pentenylfurans, 2- $\alpha\beta$ -dihydroxy-, and their phenylurethanes, A., 963.
- Δ^1 -*cyclo*Pentenylmethyl bromide, Raman spectrum of, A., 146.
- α -Pentenyl- β -methyl- β -hydroxyadipic acid, ethyl ester, γ -lactone of, (P.), B., 1130.
- 2- Δ^{β} -Pentenylphenol, 3-chloro-, and 4-fluoro-, manufacture of, (P.), B., 704.
- Penthiophen. See Thiopyran.
- Penthrinite, B., 382.
- Penthrite. See Pentaerythritol tetranitrate.
- Pentocystine, physiological availability of, A., 389.
- Pentosans, production of, from tobacco stalk and stem, B., 1118.
 decomposition of, by micro-organisms, A., 898.
 analysis of, A., 769.
 determination of, by reduction with furfuraldehyde, A., 1354.
 volumetrically, with bromine, B., 445.
 in chemical pulp, B., 719.
 in foods, B., 604.
- Pentoses, decomposition of, by micro-organisms, A., 898.
 in chronic pentosuria, A., 106.
- neo*Pentyl deuteride, Raman spectrum of, A., 807, 1446.
- cyclo*Pentylacetic acids, 2-hydroxy-, A., 340.
- cyclo*Pentylarsinic acid, A., 637.
- δ -*cyclo*Pentyl- Δ^{β} -butinene, A., 73.
- δ -*cyclo*Pentyl- Δ^{β} -butinen- α -ol, A., 73.
- cis*- δ -*cyclo*Pentyl- Δ^{β} -butylene, A., 957.
- cis*-*cyclo*Pentylcarbamide, A., 1155.
- cyclo*Pentylcarbinol, reaction of, with benzene, in presence of aluminium chloride, A., 80.
- β -*cyclo*Pentylglucoside, biosynthesis of, A., 609.
- cyclo*Pentylidenecyclopentadiene, and its maleic anhydride adduct, A., 852.
- cyclo*Pentylidinitrophenol, effect of, on thymus in guinea-pigs, A., 781.
- ϵ -*cyclo*Pentyl- Δ^{γ} -pentinen- β -ol, A., 73.
- o*-*cyclo*Pentylphenol, dinitro-, stimulation of metabolism by, A., 1411.
- γ -*cyclo*Pentyl- Δ^{α} -propinene, and its derivatives, A., 73.
- β -*cyclo*Pentylpropionic acid, and its phenylhydrazide and lead salt, A., 1107.
- γ -*cyclo*Pentyl- Δ^{α} -propylene, β -bromo-, A., 73.
- cyclo*Pentylvinylethynylcarbinol, manufacture of, (P.), B., 347.
- Pepper, chemistry of pigments of, A., 1040.

- Peppermint**, evaluation of leaves of, B., 877.
oil content of, B., 1068.
- Peppermint oil**, inhibition of secretion of gastric juice by, A., 884.
abnormal, B., 973.
detection in, of Japanese mint oil, B., 749.
- Pepsin**, ultra-violet absorption spectrum of, A., 805.
crystal structure of, A., 18.
spreading of, A., 294.
ring fission of *D*-arginine and *D*-lysine anhydrides by, A., 965.
sedimentation of, after alkaline inactivation, A., 1537.
influence of toluene on activity of, A., 404.
action of, on secretion, A., 788.
in gastric mucosa of pigs, A., 1025.
crystalline, adsorption of, by silk-fibroin or ovalbumin, A., 1025.
absorption of ultra-violet light by, A., 252.
evaluation of, A., 660.
assay and stability of, B., 606.
- Peptidase** in gastric mucosa of pigs, A., 1025.
- Peptides**, A., 694, 1203.
allocation of free amino-groups in, A., 101.
physical chemistry of, A., 26, 695, 696, 1467.
reactivity of, A., 610.
complex salts of, A., 737, 1140.
serological specificity of, A., 882.
multivalent, A., 850.
synthetic, as substrates for tryptic proteinase, A., 610.
- cycloPeptides**, formation of, from hydrolysis of blood-albumin, A., 999.
- Peptisation**, physical chemistry of, A., 165.
- Peptone**, action of ultra-violet rays on, A., 369.
combination of, with polysaccharides, A., 1390.
hyperpolypeptidemia from injections of, A., 1532.
- Peracetic acid**, oxidation of acetyl derivatives of aromatic amines with, A., 854.
oxidation of naphthols by, A., 614.
oxidation of phenols by, A., 731.
oxidation of sulphides and sulfoxides with, A., 1464.
oxidation of unsaturated hydrocarbons with, A., 1103.
reactions of, with aldehydes, A., 1084.
action of unsaturated hydrocarbons with, in acetic acid solution, A., 828.
- Peranthracites**, structure of anthracites and, B., 611.
- Perbenzoic acid**, catalysis by manganese dioxide and platinum of decomposition of, A., 941.
- Perchloric acid**. See under Chlorine.
- Per-compounds**, A., 833.
manufacture of, (P.), B., 305.
- Perezone**, constitution of, and its derivatives, A., 1501.
- Perezone**, hydroxy-, hydrate of, A., 1501.
- Perfumes**, synthesis of, B., 1165.
manufacture of, (P.), B., 749, 829.
formation of semi-acetals in, B., 700.
Empire production of essential oils for, B., 124.
violet, A., 672.
- Perhydrochrysene**, in lubricating oils, B., 714.
- Peri-acid**, analysis of sulphonation product in production of, B., 91.
- Peridotites**, from Zlatibor, W. Serbia, A., 956.
- Perilla**, cultivation of, B., 166.
- Perilla**, Chinese, constituents of, A., 420.
Perilla ocimoides. See Shiso.
- Perilla oil**, polymerisation of, B., 318.
- Perillol**, and its acetate, A., 420.
- Periodic acid**. See under Iodine.
- Periodic law**, A., 558.
and the conjugated system, A., 745.
- Periodic system**, introduction of quantum periods into, A., 1295.
- Periodicity**, law of, A., 487.
- Periploca graeca*, constituents of, A., 268.
- Periplocymarin**, A., 268.
- Peristalsis**, intestinal, action of various salts on, A., 530.
- Perkin reaction**, A., 344, 1497.
- Perlatic acid**. See Diolivetolcarboxylic acid methyl ether.
- Permalloy**, manufacture of magnetic cores of, (P.), B., 275.
- Permanganic acid**. See under Manganese.
- Permeability** of living cells, A., 1012.
- Permutite**, preparation of, A., 714.
- Permutites**, B., 848.
Hüttig's equation for, A., 168.
- Perovskia scrophulariæ*, oil from, B., 333.
- Perovskia scrophulariæ*, ethereal oils from, B., 701.
- Peroxidase**, effect of supersonic rays on, A., 400.
specificity of, A., 248.
in algæ, A., 532.
in embryos, A., 519.
in vegetable tumours, A., 269.
determination of, A., 248.
- Peroxidase reaction**, A., 1266.
- Peroxides**, bombs for fusions with, in analysis, A., 1340.
organic, preparation of, A., 1526.
detection of, A., 173, 1213.
- Peroxidogens**, organic, preparation of, A., 1526.
- Peroxy radical**, electron affinity of, A., 1058.
- Per-salts**, electrolytic apparatus for production of, (P.), B., 1148.
- Persica vulgaris*. See Peach trees.
- Persicoides**, A., 906.
- Persilicates**. See under Silicon.
- Persipan**, invert sugar in, B., 375.
- Perspiration**. See Sweat.
- Persulphates**. See under Sulphur.
- Perthiocyanic acid**, action of, on amines, A., 1488.
- Pertusaria dealbata*, thamnolic acid from, A., 1042.
- Pervaporation**, applications of, A., 1219.
- Perylene**, and its derivatives, A., 1370.
manufacture of, (P.), B., 443, 840.
- Perylene dyes**, vat, manufacture of, (P.), B., 985.
- Pests**, compositions for destruction of, (P.), B., 608.
in Queensland, B., 1157.
animal, preparations for combating, (P.), B., 288.
- Petitgrain oil**, extraction of, from *Citrus bigaradia*, B., 1164.
- Petrography**, A., 1100.
- Petrol**, toxicology of, A., 1160.
See also Gasoline.
- Petrolatum**, sulphonation of, B., 1030.
oiling of leather with, B., 863.
- Petroleum**, isotope ratio in, A., 843.
origin of, A., 469, 600.
petrography of, A., 191.
fish as source of, A., 600.
manufacture of, alloy steel tubes for, B., 1048.
corrosion in, B., 438.
interfacial tension measurements in, B., 933.
- Petroleum**, manufacture of, utilisation of waste products from, B., 885.
purification of, (P.), B., 583.
refining of, (P.), B., 486, 1083.
apparatus for, (P.), B., 663.
by American selective extraction process, B., 1081.
by distillation, B., 757.
working-up of acid sludge from, (P.), B., 10.
applications of film theory in, B., 886.
alloy steel for, B., 483.
use of nickel and its alloys in, B., 886, 1098.
solvent extraction in, B., 615.
recovery of carbon and sulphates from waste from, (P.), B., 305.
treatment of acid sludge from, (P.), B., 1083.
treatment of, (P.), B., 295.
catalytic treatment of, (P.), B., 983.
vapour-phase treatment of, (P.), B., 55.
separation of mixtures of, (P.), B., 1034.
separation of gas from, B., 934.
gum inhibitors for, (P.), B., 713.
decolorisation of, (P.), B., 181.
dewaxing of, with naphthalene and cresol, B., 133.
felt filters for, (P.), B., 434.
evaporation rate of thinners for, B., 54.
blending of, (P.), B., 617.
cracking of, B., 391; (P.), B., 663.
refining of hydrocarbons from, (P.), B., 215.
corrosion in stills for, B., 438.
corrosion of iron by, B., 727.
distillation of, prevention of corrosion of equipment for, B., 1048.
distillates, treatment of, (P.), B., 135.
refining of, (P.), B., 1083.
decolorisation of, (P.), B., 1127.
decolorisation and stabilisation of, (P.), B., 217.
dielectric constants of, B., 888.
nitrogen compounds in, A., 357.
removal of sulphur from, (P.), B., 216.
from coking stills, cracking of, B., 131.
acid-treated, neutralisation of, (P.), B., 441.
low-boiling, manufacture of, (P.), B., 838.
fractionation of, by compressed natural gas, B., 1030.
fractions, specific heat of, A., 289.
spontaneous ignition of, B., 889.
high-boiling, production of ethylene from, B., 709.
non-volatile, ebullioscopic determination of mol. wts. of, B., 581.
equilibria of crystal oil fraction of, and methane, B., 710.
detonation in, B., 342.
volume changes in mixtures of benzene, and, with alcohol and motor benzol, B., 710.
antioxidants for, (P.), B., 841.
mineral content of, B., 391.
porphyrins in, A., 727.
treatment of acid sludges from, (P.), B., 89.
varnish drying oil from acid sludge from, B., 1030.
hydrogenation of residues from, B., 790.
production of alcohols and related products from, B., 536.
utilisation of ceresin from, B., 342.
use of derivatives of, in paint and varnish, B., 464.
paint thinners from, B., 109, 836.
recovery of phenols from, (P.), B., 940.

Petroleum, production of propane and butane from, in Germany, B., 132.
 increasing yield of sulphonic acids from, B., 392.
 purification of sulphonates from, (P.), B., 984.
 storage tanks for, (P.), B., 788.
 bibliography of Soviet patents on, B., 1030.
 in S. Bavaria, A., 956.
 Bibi-Eibat, radium in, A., 190.
 of Western Canada, geology of, A., 724.
 Mid-Continent, separation of dimethylcyclohexane from, B., 887.
 ethylcyclohexane in, B., 1030.
 crude, determination of f.p. of, B., 391.
 determination in, of asphaltic substances, B., 7.
 German crude, production of lubricating oil, paraffin, and asphalt from, B., 392.
 light, determination in, of water, B., 536.
 Oklahoma, nonanaphthene in, B., 293.
 Rumanian, acid refining of, B., 178.
 Silurian, in Central Asia, A., 1348.
 West Texas, acidic constituents of distillates of, B., 1081.
 detection and determination in, of alkali metals, B., 613.
Petroleum emulsions, breaking of, (P.), B., 136, 838, 891, 1127.
 agents for breaking of, (P.), B., 837.
 cutting of, (P.), B., 345.
 superheating and foaming in dehydration of, B., 483.
Petroleum hydrocarbons. See under **Hydrocarbons**.
Petroleum jelly, use of, in printing inks and varnishes, B., 366.
Petroleum oils, treatment of, (P.), B., 1127.
 refining of, (P.), B., 89, 215, 937.
 use of anhydrous ammonia in, B., 483.
 refining, testing, and utilisation of, B., 535.
 extraction of asphalt from, B., 757.
 removal of light hydrocarbons from, (P.), B., 135.
 desulphurisation of, (P.), B., 983.
 removal of wax from, (P.), B., 294, 793, 983.
 cracking of, (P.), B., 892.
 by new German process, B., 886.
 velocity and heat of reaction in, B., 581.
 residues from, B., 7.
 high-pressure cracking unit for, B., 438.
 heat treatment of, (P.), B., 795.
 conversion of, (P.), B., 663.
 distillation of, apparatus for, (P.), B., 663.
 treatment of low-boiling fractions of, (P.), B., 89.
 treatment of slop-wax distillate from, (P.), B., 346.
 volume correction table for, B., 7.
 hydrogenation of, (P.), B., 10, 261, 344.
 neutralisation of, (P.), B., 1127.
 sulphonation of, (P.), B., 216.
 heat-conductivity and specific heat of, B., 981.
 coking of residues from, B., 789.
 treatment of sludge from, (P.), B., 1127.
 crude, classification of, B., 1081.
 Grabownica, distillation residues from, B., 483.
 heavy, coking of, (P.), B., 712.
 conversion of, into light oils, (P.), B., 214.
 distillation of, (P.), B., 217.
 from North Germany, B., 885.
 Japanese, viscosity-temperature relation of, B., 1125.

Petroleum oils, refined, stabilisation of, (P.), B., 485.
 Rumanian, cracking of, B., 438.
Petroleum products, recovery of, from oil shales, lignites, etc., (P.), B., 712.
 separation of, from oils with ethylene glycol acetate, B., 836.
 refining of, (P.), B., 892.
 with gases, B., 131.
 sweetening of, (P.), B., 983.
 densities of, B., 212.
 viscosity of, in Saybolt seconds, B., 613.
 stabilisation of, (P.), B., 136.
 recovery of fatty acids from oxidation of, (P.), B., 939.
 production of higher alcohols from, B., 392.
 differentiation of hydrocarbons in, B., 980.
 production of resins from, (P.), B., 1005.
 use of, as horticultural spray materials, B., 199.
 dark, determination of acidity of, B., 86.
 colour type of, B., 1030.
 use of ozone in testing of, B., 709.
 determination in, of sulphur, B., 86.
Petunia, colour in anthers and pollen of, A., 551.
Peucedanum decursivum, roots of, A., 420.
Phæanthine, constitution of, A., 1256.
Phæophorbide α , (*d*-)bornyl, cetyl, geranyl, and (*l*-)menthyl esters, A., 1383.
 oxime, A., 362.
Phæophorbides, fluorescence spectra of, A., 808.
 esters, partial synthesis of, A., 1382.
Phæophytin, partial synthesis of, A., 1382.
Phæoporphyrin a_5 , hydroxy-, derivatives of, A., 1382.
Phæoporphyrin b_6 oximes, A., 761.
Phæoporphyrin b_7 , and its oxime, A., 503.
Pharbitis hispida, radiotropism in, A., 134.
Pharmaceutical emulsions, preparation of, with hand homogeniser, B., 653.
 preparations, manufacture of, (P.), B., 287, 382, 524, 974, 1069, 1166.
 for external application, (P.), B., 974.
 fermentation of lemonade in, B., 572.
 substitute for litmus in analysis of, B., 828.
 detection and determination of copper in, B., 45.
 determination in, of copper, in presence of iron, B., 523.
 of moisture, B., 45.
 products, manufacture of, (P.), B., 205, 254, 606.
 galenical, testing of, by micro-sublimation, B., 877.
 determination in, of moisture, B., 78.
 solutions, stabilisation and sterilisation of, B., 1067.
Pharmacopœial tests, B., 205, 606.
Pharmacy, mediæval practices in, B., 700.
Pharmakosiderite, crystal structure of, A., 571.
Phases, third order transformation of, A., 155.
 metastable, nucleus formation in, A., 560.
 two co-existent, A., 167.
Phaseolus mungo. See **Beans**, mottled gram.
Phaseolus radiatus. See **Katjang** idjoe, black.
Phaseolus vulgaris. See **Beans**.
Phasants, vitamin-D requirements of chicks, turkeys, and, A., 1287.
Phellandral nitrophenylhydrazones, A., 482.

Phenacetin, preparation of, from phenol, A., 744.
 m.p. of binary systems of, with bromural and veronal, A., 582.
 equilibrium of, with antipyrine and quinine, A., 448.
 with antipyrine and salol, and with acetanilide and sulphonal, A., 970.
 with antipyrine and sulphonal, A., 303.
 with antipyrine and urethane, A., 704.
 with menthol and antipyrine or urethane, A., 1078.
Phenaceturic acid, pharmacology of, A., 1020.
Phenacoccus gossypii, control of, B., 1013.
Phenacyl alcohol, *p*-fluoro-, and its esters, A., 209.
 β -Phenacyl- α -diphenyl-*n*-buta- α -dione, A., 1500.
Phenacyl- γ -diphenylbutyro- γ -lactone, A., 1500.
4-Phenacylflavylum ferrichloride, A., 354.
9-Phenacyl-1:2:3:4:10:11-hexahydroxanthene, A., 1377.
3-Phenacylidene- β -naphthoxindole, A., 501.
cis-3-Phenacylideneoxindole, A., 356.
3-Phenacylideneoxindole, α -amino-, benzoyl derivative, A., 356.
2-Phenacyl- β -naphthoxindole, A., 501.
3-Phenacyl- β -naphthoxindole, 3-hydroxy-, A., 501.
Phenacyl-3-nitropyridinium bromide and perchlorate, A., 988.
Phenacyl-3-nitropyridiniumol-betaine, A., 988.
3-Phenacyloxindole, α -amino-, and 3-hydroxy- α -amino-, benzoyl derivatives, A., 356.
7-Phenacyloxycoumarin, A., 986.
Phenacyl-2-picolinium bromide, *p*-bromo-, A., 988.
Phenacyl-3-picolinium bromide, and *p*-bromo-, and perchlorate, *p*-bromo-, A., 988.
Phenacylpicoliniumol-betaines, *p*-bromo-, A., 988.
2-Phenacylpyridine hydrobromide, perchlorate, and methiodide, A., 988.
Phenacylpyridinium benzoate, *p*-bromo-, and bromide, 3:4-dichloro-2-nitro-, and perchlorate, *m*-nitro-, A., 988.
 bromide, additive compound of, perchlorate, oxime and *p*-bromo-derivative of, A., 987.
 compounds, A., 987.
Phenacylpyridiniumol-betaine, *p*-bromo-, A., 988.
m-nitro-, A., 988.
Phenacylisoquinolinium bromide, and *p*-bromo-, and perchlorate, A., 988.
Phenacylquinoliniumol-betaine, and *p*-bromo-, A., 988.
Phenacylisoquinoliniumol-betaine, and *p*-bromo-, A., 988.
Phenacylsulphonic acid, cleavage of, A., 1240.
Phenacylsulphonylacetic acid, A., 498.
Phenacylsulphonylmethanesulphocarboxylic acid, A., 498.
Phenacyl-*m*-toluidine, A., 1251.
Phenacyltriphenylphosphonium bromide, A., 988.
Phenanthraquinol, 2- and 4-chloro-, A., 1372.
Phenanthraquinone, condensation of, with nitromethane, A., 347.
 derivatives, A., 1372.
Phenanthraquinone, 2- and 4-chloro-, A., 1372.
 thiolhydroxy-, A., 762.

- Phenanthrene**, synthesis of, A., 1495.
ultra-violet absorption spectrum of, A., 913.
compounds of physiological importance, A., 1275.
derivatives, A., 980.
 synthesis of, A., 622, 1495.
 absorption spectra of, A., 680.
 pharmacology of, A., 117.
 effect of, on lipin contents of organs, A., 1411.
 action of, on muscle, A., 1019.
 4:5-disubstituted, configuration of, A., 869.
 hydrogenated, synthesis of, A., 975.
Phenanthrene, 9-hydroxy-, synthesis of, A., 1361.
 2:5-dihydroxy-, and its acetyl derivative, A., 1497.
Phenanthrenes, synthesis of, A., 1358.
Phenanthrene group, pinacolin and retro-pinacolin rearrangements in, A., 341.
Phenanthrene series, A., 973.
Phenanthrene-9-aldehyde acetal, A., 741.
Phenanthrenecarboxylic acids, esters of, reaction of, with Grignard reagents, A., 1234.
Phenanthrene-1:2-dicarboxylic anhydride, A., 1358, 1495.
Phenanthridine, 3:9-dibromo-, A., 1507.
Phenanthridine series, A., 1506.
Phenanthridone, amino-, 3-bromo-, chloro-nitro-, 2- and 7-hydroxy-, and their acetyl derivatives, and 3-mono- and 2:7-di-nitro-, A., 1507.
3-Phenanthroamliide, A., 622.
Phenanthroline, magnetic properties of ferric complexes of, A., 923.
 β -2-Phenanthrylerotomic acid, and its esters, A., 335.
2-(3-Phenanthrylmethyl)cyclohexanone-2-carboxylic acid, ethyl ester, A., 1359.
Phenazhydrins, synthesis of, A., 224.
Phenazines, synthesis of, A., 224.
Phenazine series, syntheses and molecular complexes in, A., 991.
Phenazine- N,N' -dimethyl-9:10-dihydrophenazine dihydrochloride, A., 992.
Phenazine-diphenylamine, A., 992.
Phenazine- N -methyldihydrophenazine dihydrochloride, A., 991.
Phenazine-phenylenediamines, A., 992.
Phenazone derivatives, 4:5-disubstituted, configuration of, A., 869.
 assay of, B., 252.
Phenethyl series, relation of acids of, to those of normal series, A., 1121.
 p -Phenetidine hydrochloride, condensation of, with epichlorohydrin, A., 614.
 α -acetoxy- and α -hydroxy-isobutyl and α -benzoyl and α -salicyl-nitromandelyl derivatives, A., 339.
 β - p -Phenetidinocrotono- p -phenetidine, A., 336.
9- p -Phenetidino-3:6-diethoxy-10-ethyl-acridinium chloride, A., 1132.
9- p -Phenetidino-3:6-diethoxy-10-methyl-acridinium chloride, A., 1132.
9- p -Phenetidino-3:6-dimethoxy-10-ethyl-acridinium chloride, A., 1132.
9- p -Phenetidino-3:6-dimethoxy-10-methyl-acridinium chloride, A., 1132.
 γ -Phenetoylbutyric acid, A., 961.
 δ -Phenetoylvaleric acid, A., 1236.
 β - p -Phenethylaminoisobutyric acid, and its nitro-derivative, A., 339.
 α - p -Phenethylaminoisobutyrylphenetidine, and its hydrochloride, A., 339.
 p -Phenethylcarbylamine, A., 339.
 ϵ - p -Phenethylhexoic acid, A., 1236.
- N - p -Phenetyl- NH - p -phenetylacetamide**, N :3:5-dibromo-, and its salts, A., 1490.
 p -Phenethylpyridinium perchlorate, A., 1505.
Phenol, manufacture of, (P.), B., 93, 621, 1037.
 by fusion of sodium benzenesulphonate with sodium hydroxide, B., 91, 137.
 recovery of, electrically, from phenoxide liquors, B., 835.
 dielectric polarisation of, A., 809.
 molecular heat of, A., 1063.
 adsorption of, from aqueous solution by carbon, A., 160.
 surface tension of dilute aqueous solutions of, A., 819.
 association of, in various solvents, A., 166.
 effect of salts on temperature of miscibility of, with water, A., 1067.
 distribution of, between olive oil and serum, A., 779.
 alkylation of, with alcohols, A., 744.
 reaction of, with thionyl chloride, A., 855.
 compound of, with aniline, A., 1488.
 with m -5-xyldine, A., 744.
 and bromo-, mono- and tri-chloro-, tri-iodo- and nitro-, mercury ethyl salts, A., 202.
 derivatives, fungicidal power of, A., 409.
 and amino-, chloro-, and nitro-, 3:5-dinitrophenylurethanes, A., 207.
 resins from. See Resins, phenol.
 removal of, from surface waters, B., 880.
 loss of, from phenol lozenges, B., 252.
 effect of fatigue on oxidation of, on various diets, A., 1530.
 toxicity of, and protective action of sodium citrate, A., 526.
 injected, influence of hunger on, A., 1530.
 non-dyeing sulphurised, production of, (P.), B., 1132.
 determination of, A., 270.
 iodometrically, A., 1390.
 in salicylic acid, B., 664.
Phenol, o -amino-, preparation of acyl and benzenesulphonyl derivatives of, A., 1361.
 p -amino-, manufacture of, B., 664.
 hydrochloride, detection by, of copper and iron, A., 837.
 p -bromophenylthiocarbamide, A., 206.
 o -chloro-, derivatives of, bactericidal and fungicidal action of, A., 1031.
 hexachloro-, production of, (P.), B., 621.
 4-chloro-2-amino-, and -2-nitro-, preparation of, A., 744.
 6-iodo-3-nitro-, and triiodo- m -nitro-, and their derivatives, A., 1119.
 p -nitro-, use of, in manufacture of crêpe rubber, B., 512.
 dinitro-, effect of, on carbohydrate metabolism, A., 1275.
 on respiratory cardiac metabolism, A., 1159.
 on metabolism of white rats, A., 1275.
 on oxygen consumption in iodoacetic acid poisoning, A., 530.
 fever caused by, A., 394.
 2:4-dinitro-, purification of, A., 339.
 dissociation constant of, and Debye-Hückel theory, A., 34.
 dissociation constant and solubility of, in salt solutions, A., 1203.
 salts of nicotine and, (P.), B., 381.
 therapeutic action of, A., 655.
 effect of administration of, A., 1020.
 effect of, on blood-sugar, cholesterol, and oxygen consumption, A., 1159.
 on heart, A., 526.
 on metabolism, A., 526.
- Phenol**, 2:4-dinitro-, effect of, on pregnancy and on excretion in rats, A., 1412.
 on respiration, A., 395.
 toxicity of, A., 1159.
 derivatives, effect of, on metabolism, A., 526.
 detection and determination of, in capsules and tablets, B., 1022.
Phenols, formation of, in catalytic decomposition of ethyl alcohol by Lebedev's method, B., 442.
 manufacture of, from halogenated hydrocarbons, (P.), B., 396.
 in distillation of peat, B., 6.
 from low-temperature tar, B., 391.
 extraction of, from tar oils by phenoxide method, B., 437.
 recovery of, from gas liquors, (P.), B., 440.
 from primary tars, B., 984.
 separation of, after recovery from tars, B., 56.
 purification of, (P.), B., 396.
 desulphurisation of, after recovery from petroleum, (P.), B., 940.
 physico-chemical properties of solutions of, in liquid hydrogen fluoride, A., 582.
 acetylation of hydroxyl groups of, A., 1122.
 introduction of isobutyl groups into, A., 483.
 conversion of, into hydrocarbons, (P.), B., 183.
 dehydrogenation of, A., 80, 1237.
 hydrogenation of, B., 790, 795; (P.), B., 1132.
 oxidation of, by peracetic acid, A., 731.
 coating compositions from chlorinated polymerisation products of, (P.), B., 736.
 electrochemical reduction of, A., 338.
 condensation of, and their ethers, with acetonedicarboxylic acid, A., 343, 353.
 with ethyl chloroformylcholate, A., 1366.
 with β -ketonic esters, A., 1503.
 condensation products of alcohols and, (P.), B., 443.
 manufacture of condensation products of, with formaldehyde, (P.), B., 1005.
 action of dicyanogen on, A., 1491.
 reaction of, with mercuric iodide in alkaline solution, A., 615.
 molecular compounds of, A., 744.
 medicinal magnesium compounds of, (P.), B., 124.
 ethers of, condensation of, with β -aryl-glutaconic acids, A., 1366.
 production of derivatives of, (P.), B., 940.
 manufacture of halogeno-derivatives of, (P.), B., 925*.
 preparation of mercury derivatives of, A., 1139.
 octoic acid derivatives of, (P.), B., 761.
 removal of, from hydrocarbons, (P.), B., 214.
 from waste water, B., 336.
 toxicology of, A., 1159.
 aromatic, condensation of, with phosphoric acid, A., 208.
 higher, conversion of, into lower phenols, B., 442.
 polyhydric, action of alkaline hydrogen peroxide on, A., 982.
 polynuclear, manufacture of, (P.), B., 841.
 resin, constitution of, and their biogenetic relations, A., 627.
 detection of, A., 1474.

- Phenols**, detection of, with *p*-chlorobenzazide, A., 998.
by means of 3:5-dinitrobenzazide, A., 207.
determination of, in urine, A., 648.
- Phenols**, bromo-. See **Bromophenols**.
- Phenols**, chlorinated, polymerised, adhesives from, (P.), B., 281.
- Phenols**, chloro-. See **Chlorophenols**.
- Phenols**, dinitro-. See **diNitrophenols**.
- Phenols**, substituted, production of, (P.), B., 841.
- Phenols**, β -hydroxyethyl ethers of, A., 1247.
- Phenolase**, measurement of activity of, A., 1278.
- Phenolazooxobenzenes**, A., 338.
- Phenolglucoside**, A., 1485.
- Phenol- β -D-glucoside**, salts of, A., 330.
- Phenols**, 6-methyl ether, fission of, by almond emulsion, A., 401.
- Phenol- β -D-glucosides**, enzymic fission of, A., 964.
effect of substitution on, A., 1536.
- Phenolic compounds**, bromination of benzoates of, A., 207.
- Phenolic liquors**, recovery of by-products from, (P.), B., 784.
- Phenol-lignin**, and its derivatives, A., 1373.
- Phenolphthalein**, decolorisation of, by sodium hydroxide, A., 1466.
mercury ethyl salt, A., 202.
- Phenolphthalein**, *tetradiodo*-, compositions for oral administration from, (P.), B., 1119.
cesium salt, use of, in gall-bladder visualisation, A., 1264.
- Phenolsulphonaphthalein**, mercury ethyl salt, A., 202.
- Phenolsulphonic acid**, alanine and β -aminobutyric acid salts, A., 1486.
- Phenol-2:4-sulphonic acid**, salts, A., 1360.
- Phenosafraanine** as inhibitor of Pasteur effect, A., 777.
- Phenoxarsonium salts**, A., 1257.
- Phenoxides**, synthesis of, B., 442.
alkali, production of, (P.), B., 183.
- Phenoxellurine oxide**, A., 100.
*di*bisulphate, reaction of, with platinum compounds, A., 100.
- Phenoxellurylium platichloride**, A., 100.
- Phenoxyacetic acids**, polyglycol esters, production of, (P.), B., 762.
- Phenoxyacetone**, 2:4-dinitro-, and its oxime and its *p*-toluenesulphonate, A., 345.
- Phenoxyacetoxime**, *o*-nitro-, *p*-toluenesulphonate, A., 345.
- Phenoxyalkanols**, arsenated, A., 99.
- Phenoxyalkylamines**, hydroxy-, preparation of, A., 1361.
- Phenoxyamines**, adrenolytic action of, A., 1156.
- γ -Phenoxy- α -benzylbutyric acid**, and its amide, A., 1242.
- γ -Phenoxybutyramide**, A., 873.
- Phenoxybutyramidine hydrochloride**, A., 487.
- γ -Phenoxybutyric acid**, α -amino-, ethyl ester hydrochloride, A., 759.
 γ -*m*- and *p*-chloro-, A., 1242.
- α - γ -Phenoxybutyryl-*o*-aminobenzamide**, A., 873.
- γ -Phenoxybutyryl-*o*-aminobenzylamide**, A., 873.
- γ -Phenoxybutyryl-*o*-nitrobenzylamide**, A., 873.
- S*-Phenoxytrichloromethylthiol**, and *S*-2-chloro-, A., 854.
- α -Phenoxydibenzyl ketone**, A., 1124.
- Phenoxyethanols**. See **isoPropanols**.
- β -Phenoxyethyl *p*-toluenesulphonate**, β -*m*- and *p*-chloro-, A., 1242.
- Phenoxyethylamine**, effect of constitution on pharmacological action of derivatives of, A., 398.
- Phenoxyethylamines**, analgesic and sedative action of, A., 245.
- 4(5)- β -Phenoxyethylglyoxaline hydrochloride**, A., 759.
- Phenoxyethylpiperidine**, effect of constitution on pharmacological action of derivatives of, A., 398.
- 4(5)- β -Phenoxyethyl-2-thiolglyoxaline**, A., 759.
- 3-Phenoxy- β -naphthoic acid**, A., 220.
- γ -Phenoxy- α -oxido- β -methylbutyric acid**, and its ethyl ester, A., 744.
- 4-Phenoxyphenylpyruvic acid**, 3:5-diiodo-4-(4'-hydroxy)-, and 3:5-diiodo-4-(3:5'-diiodo-4'-hydroxy)-, A., 976.
- 2- γ -Phenoxypropyl-3:4-dihydroquinoline**, A., 873.
- 2- γ -Phenoxypropyl-4-quinazoline**, A., 873.
- Phenyl allyl sulphide**, *o*- and *p*-amino-, and their derivatives, A., 485.
n-amyl, *n*-butyl, and *n*-hexyl selenides, and their dibromides, A., 875.
arsenoxide, dimeric, A., 227.
azide, reaction of, with fenchenes and their derivatives, A., 349.
4-carboxy- and 4-cyano-2-arsinophenyl ethers, A., 637.
8-carboxy-1-naphthyl sulphide and sulphoxide, A., 618.
 γ -chloro- β -hydroxy-*n*-propyl, β -hydroxyethyl, and 2-hydroxy-1-cyclohexyl sulphides, A., 729.
chlorosulphite, electric moment of, A., 1055.
cholesterylcarbonate, and 2:4:6-*tri*-bromo-, and *p*-nitro-, A., 745.
 γ -diethoxy-*n*-propyl ether, and its derivatives, A., 846.
 ϵ -diethylamino-*n*-amyl ether, and its hydrochloride, A., 874.
ethers, *o*-amino-, rearrangement of, A., 1491.
groups, rotations of configuratively related carboxylic acids containing, A., 1122.
passage of, from organometallic compounds, A., 1139.
halides, vibrating mechanical models of, A., 568.
4²-cyclohexenyl ether, A., 745.
iodide, molecular heat of, A., 1063.
 β -methylallyl ether, and *p*-chloro-, A., 483.
 β -naphthylmethyl ether, isomerisation of, A., 485.
 δ -phenylbutyl ether, A., 483.
picryl sulphide, 2-amino-, acetyl derivative, A., 616.
benzoyl sulphide, A., 615.
selenocyanide, 2:4:6-*tri*bromo-, A., 1257.
sulphates, attempted synthesis of, A., 338.
sulphite, sodium derivative, A., 79.
- Phenylacetic acid**, distribution of, between liquid phases, A., 929.
mixtures of, with its sodium salt, as buffer solutions, A., 1076.
molecular compounds of, with its salts and esters, A., 1323.
tryptamine salt, A., 224.
- Phenylacetic acid**, 3:4-dihydroxy-, in meal-worms, A., 646.
- Phenylacetic acids**, synthesis of, from gallic acid and its methyl esters, A., 619.
with *tert*-butyl radical in the ring, synthesis of, A., 342.
- Phenylacetic anhydride**, molecular compounds of, with salts of the acid, A., 1323.
- Phenylacetoneitrile**, condensation product of, with phenylpyruvic acid, A., 975.
- Phenylacetoneitriles**, preparation of, from aromatic aldehydes, A., 617.
substituted, and their derivatives, A., 1122.
- Phenylacetate-tryptamide**, A., 224.
- 9-Phenyl-10- α -acetoxybenzylanthracene**, A., 1369.
- Phenylacetylanthranol**, A., 217.
- Phenylacetylbiuret**, A., 225.
- o*-Phenylacetylhexahydrobenzoic acid**, and its phenylhydrazones, A., 1246.
- Phenyl 1-acetyl-2-indolyl ketone**, *o*-hydroxy-, A., 1379.
- 2-Phenylacetyl tetrahydrobenzoic acids**, A., 1246.
- Phenylalanine**, hydrolysis of, A., 1465.
naphthylhydantoin, A., 411.
relation of, to growth, A., 113.
detection of, colorimetrically, A., 370.
- Phenylalanine**, dihydroxy-, glycogenolytic action of, A., 1172.
- dl*-Phenylalanine**, benzenesulphonyl derivative, A., 101.
- l*-Phenylalanine**, solubility of, in water, A., 695.
- 2-Phenyl-4-aldehydophenylpyrimidines**, 5-hydroxy-, A., 1133.
- 5-Phenyl-5-alkylbarbituric acids**, synthesis of, A., 501.
- 2-Phenyl-*l*-*p*-allylthiolphenyl-4:5-diketopyrrolidine-4-*p*-allylthiolanil**, A., 485.
- Phenylamines**, colour reaction of, A., 1390.
- Phenylamino-**. See **Anilino-**.
- Phenyl α -aminodiphenyl ketone**, and its perchlorate, A., 1124.
- Phenyl α -aminoethyl ketone**, *o*-hydroxy-, benzoyl derivative, and its hydrochloride, A., 85.
- Phenylaminomethylcarbinol**, 3:4-dihydroxy-, inversion of hypertensive effects of, A., 1533.
- s*-Phenyl-*o*-aminophenylthiocarbamide**, condensation of, with ω -bromoacetophenone, A., 1386.
- Phenylisoamylacetic acid**, cyano-, ethyl ester, A., 501.
- γ -Phenyl-*n*-amyl alcohol**, A., 1122.
- l*- γ -Phenyl-*n*-amyl alcohol**, A., 480.
- l*- δ -Phenyl-*n*-amyl alcohol**, A., 1122.
- γ -Phenyl-*n*-amyl bromide**, A., 1122.
- l*- γ -Phenyl-*n*-amyl bromide**, A., 480.
- 5-Phenyl-5-isoamylbarbituric acid**, and 4-imino-, A., 501.
- Phenyl *n*-amyl ketone**, *p*-chloro-, A., 980.
- δ -Phenylamyl methyl ketone**, and its *p*-nitrophenylhydrazones, A., 1368.
- Phenyl α -anilino- β -phenylethyl ketone**, A., 1241.
- Phenyl-*p*-anisyl-2-furlycarbinol**, A., 626.
- 2-Phenyl-4-anisyl-5:6-naphtha-(1':2')-pyrylium picrate**, A., 1130.
- 2-Phenyl-4-anisylpyrimidines**, 5-hydroxy-, A., 1133.
- β -Phenyl- β -anthranilpropionic acid**, A., 1235.
- 4-Phenylanthraquinone-1-carboxylic acid**, and its methyl ester, A., 752.
- γ -(*anti*)-Phenyl 1-anthraquinonyl ketoxime**, A., 869.
- Phenylarsine**, A., 767.
reactions of, with lead and tin organic compounds, A., 997.
- Phenylarsinic acid**, *m*-amino-, action of hydrobromic acid on, A., 768.
p-amino-, derivatives, A., 768.

- Phenylarsinic acid, 3-amino-4-hydroxy-, formaldehydesulphoxylate, chemotherapy with, A., 109.
- 3-acetyl derivative, toxicity of diethylamine and sodium derivatives of, A., 246.
- 2-chloro-, reactivity of chlorine in 5-substituted derivatives of, A., 637.
- 2-chloro-5-cyano-, and -5-hydroxy-, A., 637.
- 3-nitro-4-hydroxy-, preparation of, from *p*-chloroaniline, A., 1514.
- 3:5-dinitro-4-hydroxy-, A., 99.
- Phenyl aryl ketones, *o*-nitro-, preparation of, A., 1498.
- 2-Phenylbenzamidophenyl methyl sulphide, 2-*o*-nitro-, A., 615.
- 2-Phenylbenzamidophenylmethylsulphone, 2-*o*-nitro-, A., 615.
- Phenyl γ -benzamido- β -phenyl-*n*-propyl ketone, A., 355.
- Bz*-1-Phenylbenzanthrone, A., 1124.
- 4-Phenylbenzanthrone, A., 751.
- 1:9-(3'-Phenyl)benzanthrone, 1:9-(1'-hydroxy-*m*-nitro)-, A., 212.
- 2-Phenylbenzenesulphonamidophenyl mercurichloride, 2-*o*-nitro-, A., 486.
- 2-Phenylbenzenesulphonamidophenylmethylsulphone, 2-*o*-nitro-, A., 486.
- Phenylbenzimidazole hydrochloride, A., 358.
- 2-Phenylbenzimidazolesulphonic acid, sodium salt, production of, (P.), B., 1120.
- 2-Phenylbenzopyranol, A., 1248.
- 2-Phenyl-5:6-benzoquinoline, and its picrate, A., 357.
- 4-Phenyl-5:6-benzoquinoline, 2-hydroxy-, and its picrate, A., 336.
- Phenyl-*p*-benzoquinones, nitro-, A., 86.
- 2-Phenylbenzo-1:2:3-triazole 1-oxide, 5-chloro-, A., 855.
- 9-Phenyl-2:3-benzoxanthanol, A., 220.
- Phenylbenzoxanthenols, constitution of, A., 1247.
- 12-Phenyl-12- β -benzoxanthenyl chloride zincchloride, ferrichloride, stannichloride, and perchlorate, A., 487.
- p*-Phenylbenzoylacetylmethane, A., 198.
- Phenyl- β -benzoyl ethylsulphone, and its polymeride, A., 1241.
- 2-Phenyl-3-benzoylmethoxymethylquin-oxaline, A., 982.
- Phenyl- β -benzoylvinylsulphone, A., 1241.
- 2-Phenylbenzthiazoline, 5-nitro-, *S*-dioxide, and its derivatives, A., 1511.
- N*-Phenyl-*N'*-benzthiazolyl-1-thiocarbamide, and 5-chloro-, A., 226.
- Phenyl benzthiazyl selenosulphide, *o*-nitro-, manufacture of, B., 467.
- 1-Phenyl-1:2:3-benzotriazole, 5-amino-, and 5-nitro-*p*-bromo-, A., 226.
- Phenyl α -benzylaminoethyl ketone hydrochloride, A., 209.
- Phenyl α -benzylamino- β -phenylethyl ketone hydrochloride, A., 209.
- α -Phenyl- β -benzylbutane- $\alpha\gamma$ -diol, A., 199.
- γ -Phenyl- β -benzylbutyric acid, α -amino-, A., 746.
- α -Phenyl- β -(benzyl- β' -diethylaminoethyl-amino)propan- α -ol, production of, (P.), B., 840.
- 2-(β -Phenyl- α -benzylethyl)diphenyl-2'-carboxylic acid, 2- α -hydroxy-, and its lactone, A., 1496.
- β -Phenyl- γ -benzylglutaric acid, $\alpha\gamma$ -dihydroxy-, acetyl derivative and γ -lactone of, A., 488.
- Phenylbenzylidenes, A., 1115.
- β -Phenyl- α -benzylmaleic anhydride, and its dimethyl ester, A., 975.
- 5-Phenyl-1-benzyl-3-methyl-5-ethylhydantoin, manufacture of, (P.), B., 830.
- 5-Phenyl-3-benzyl-1-methyl-5-ethylhydantoin, manufacture of, (P.), B., 830.
- α -Phenyl- β -benzyl- α -methyl- β -ethylhydrazine, and its hydrochloride, A., 1119.
- p*-Phenylbenzylmethylpropylammonium nitrate, optical activity of, in chloroform, in presence of inactive ammonium halide, A., 202.
- N*-Phenyl-*N'*-benzylpiperazine, and its hydrochloride, A., 358.
- β -Phenyl- α -benzylpropionic acid, β -*p*-bromo-, preparation and resolution of, A., 488.
- δ -Phenyl- β -benzylvaleric acid, A., 746.
- δ -Phenyl- β -benzylvaleric acid, α -amino-, A., 746.
- Phenyl- α -bromo- β -benzoyl ethylsulphone, A., 1241.
- Phenyl- β -bromo- β -benzoyl ethylsulphone, A., 1241.
- Phenyl- β -bromo- β -benzoyl vinylsulphone, A., 1241.
- 9-Phenyl-10- α -bromobenzylanthracene, A., 1369.
- dl*- β -Phenyl- α -*m*-bromobenzylpropionic acid, *dl*- β -*p*-bromo-, and its derivatives, A., 488.
- Phenyl-5-bromocotarnomethylcarbamide, and its oxime, A., 1513.
- Phenyl-*p*-bromo-2-furylcarbinol, A., 626.
- Phenyl α -bromo- β -hydroxy- $\beta\delta$ -diphenyl- $\Delta\gamma$ -butenyl ketone, A., 493.
- 2-Phenyl-4-5'-bromo-2'-hydroxyphenylpyrimidine, 5-hydroxy-, A., 1133.
- Phenyl γ -bromo- α -iodo- $\beta\delta\delta$ -triphenyl- $\Delta\alpha$ -butenyl ketone, A., 493.
- Phenyl-*tr*-bromomethylcarbinol, *o*-chloro-, and its esters, A., 486.
- Phenyl α -bromo-*m*-methylstyryl ketones, A., 492.
- 5-Phenyl-3-*p*-bromophenyl-2-*p*-anisyl-2:3-dihydro-1:3:4-thiadiazole, A., 1512.
- 5-Phenyl-3-*p*-bromophenyl-2:3-dihydro-1:3:4-thiadiazole, A., 1512.
- Phenyl α -bromo- β -phenylethyl ketone, reaction of, with aniline, A., 1241.
- 5-Phenyl-3-*p*-bromophenyl-2-(4-hydroxy-3-methoxyphenyl)-2:3-dihydro-1:3:4-thiadiazole, A., 1512.
- 5-Phenyl-3-*p*-bromophenyl-2-(2-hydroxyphenyl)-2:3-dihydro-1:3:4-thiadiazole, A., 1512.
- 5-Phenyl-3-*p*-bromophenyl-2-methyl-2:3-dihydro-1:3:4-thiadiazole, A., 1512.
- 5-Phenyl-3-*p*-bromophenyl-2-piperonyl-2:3-dihydro-1:3:4-thiadiazole, A., 1512.
- 5-Phenyl-3-*p*-bromophenyl-2-styryl-2:3-dihydro-1:3:4-thiadiazole, A., 1512.
- s*-Phenyl-*p*-bromophenylthiocarbamide, *p*-cyano-, A., 364.
- s*-Phenyl-*op*-*di*bromophenylthiocarbamide, *s*-*p*-bromo-, A., 1136.
- 4-Phenyl-2-*p*-bromophenyl-1:2:3-triazole, A., 763.
- Phenyl α -bromo- α -*p*-toluenesulphonylmethyl ketone, A., 1116.
- α -Phenylbutadiene, polymerisation of, A., 1497.
- Phenylbutadienecarboxylic acids, isomeric, syntheses of, A., 747.
- α -Phenylbutane, β -bromo-, A., 747.
- $\beta\gamma$ -*di*bromo-*p*-amino-, acetyl derivative, A., 205.
- β -Phenyl-*n*-butane- $\beta\gamma$ -diol, A., 622.
- δ -Phenyl-*n*-butane- $\alpha\beta\delta$ -tetracarboxylic acid, ethyl ester, A., 976.
- δ -Phenyl-*n*-butane- $\alpha\beta\gamma$ -tetracarboxylic acid, ethyl ester, A., 977.
- δ -Phenyl-*n*-butane- $\alpha\beta\gamma$ -tricarboxylic acid, and its methyl esters, A., 976.
- ethyl ester, A., 1497.
- δ -Phenyl-*n*-butane- $\alpha\gamma\delta$ -tricarboxylic acid, A., 1497.
- δ -Phenyl-*n*-butanetricarboxylic acids, A., 976.
- γ -Phenyl- $\Delta\beta$ -butenoic acid, *o*-nitro-, A., 211.
- α -Phenyl- $\Delta\beta$ -buten- α -ol, A., 963.
- α -Phenyl-*n*-butyl alcohol, polymeride of, A., 481.
- l*- γ -Phenyl-*n*-butyl alcohol, A., 480, 1122.
- l*- γ -Phenyl-*n*-butyl bromide, A., 480, 1122.
- α -Phenyl- β -*n*-butylbutane- $\alpha\gamma$ -diol, A., 198.
- α -Phenyl- $\Delta\beta$ -butylene, *p*-amino-, and its salts and acetyl derivative, A., 205.
- β -Phenyl- $\Delta\beta$ -butylene, β -*p*-bromo-, A., 1115.
- δ -Phenyl- $\Delta\alpha$ -butylene, $\gamma\delta$ -*di*hydroxy-, A., 750.
- Phenyl-*n*-butylglyoxime, *p*-chloro-, and its nickel derivative, A., 980.
- γ -Phenylbutylmalonic acid, ethyl ester, A., 1368.
- γ -Phenyl-*n*-butyl methyl ketone, and its semicarbazone, A., 1368.
- β -Phenylisobutyl methyl ketone, and its semicarbazone, A., 1368.
- β -Phenylbutyric acid, *l*-ethyl ester, A., 1122.
- α -Phenyl- γ -butyrolactone, A., 474.
- 1- α -Phenylbutyrylpiperidine, A., 71.
- Phenylcarbamic acid, and *p*-bromo-, *p*-hydroxy-, and *p*-nitro-, cholesteryl esters, A., 209.
- spinasteryl and α -spinasteryl esters, A., 210.
- Phenylcarbamic acid, 2-amino-, ethyl ester, A., 359.
- m*-nitro-, benzyl ester, A., 336.
- o*-, *m*-, and *p*-mono- and 3:5-*di*-nitro-, esters, A., 958.
- Phenylcarbamide, 4-chloro-2:6-*di*-nitro-, A., 1360.
- p*-thiocyano-, A., 1488.
- p*-Phenylcarbamidoazoxybenzenes, A., 338.
- ϵ -Phenylcarbamido- α -benzenesulphonyl-*d*-lysine, A., 101.
- γ -Phenylcarbamido- β -hydroxypropane-sulphonic acid, and its barium salt, A., 1111.
- Phenylcarbamidomethylenecetoacetic acid, ethyl ester, A., 358.
- Phenylcarbamidomethylenemalonic acid, ethyl ester, A., 358.
- β - ω -Phenylcarbamido- β -phenylpropionic acid, and its ethyl ester, A., 94.
- β -Phenylcarbamylcinnamionitrile, α -cyano-, A., 1365.
- β -Phenylcarbamyl- β -phenylpropionitrile, α -cyano-, A., 1365.
- N*-Phenylcarbazole, 2:4'-*di*-nitro-, A., 95.
- Phenylcarbimide, dipole moment of, A., 916.
- Phenylcarbimide, 3:5-*di*-nitro-, A., 207.
- Phenylcarbimides, nitro-, as reagents for alcohols, A., 958.
- dl*- β -Phenyl- α -*m*- and -*p*-carboxybenzylpropionic acids, A., 488.
- Phenyl-*o*-carboxyphenylmethylarsine oxide and sulphide, A., 1515.
- Phenyl-*m*-carboxyphenylmethylarsine oxide hydrochloride and sulphide, A., 1515.
- Phenyl-*p*-carboxyphenylmethylarsine oxide hydrochloride and sulphide, A., 1514.
- β -Phenyl- α -*o*-carboxyphenylpropionolactone, β -hydroxy-*o*-nitro-, and its methyl ester, A., 344.
- Phenyldichloroarsine, *p*-thiocyano-, A., 228.
- 9-Phenyl-10- α -chlorobenzylanthracene, A., 1369.

- β -Phenyl- α -*m*-chlorobenzyl- α -*m*- and *p*-bromobenzylpropionic acids, and their quinine salts, A., 488.
- β -Phenyl- α -*p*-chlorobenzylpropionic acids, A., 488.
- α -Phenyl- γ -chlorobutyronitrile, A., 1122.
- α -Phenyl- α -chlorocinnamionitrile, and its derivative with alcoholic potassium cyanide, A., 213.
- cis*-Phenyl α -chloro-2:4-dimethylstyryl ketone, and its derivatives, A., 1368.
- Phenyl-*p*-chloro-2-furylcarbinol, A., 626.
- Phenyl- γ -chloro- β -hydroxy-*n*-propylsulphone, A., 729.
- Phenyltrichloromethylcarbinol, *o*-chloro-, and its esters, A., 486.
- γ -Phenyl- α -5-chloro-2-nitrophenylisothiosemicarbazide, and its metallic salts, A., 855.
- Phenyl-4'-chlorophenylcarbamide, and 4-bromo-, 4-chloro-, 2-chloro-4-nitro-, and nitro-, A., 1118.
- α -Phenyl- β -*o*-chlorophenylethylpyridinium bromide, β -hydroxy-, A., 1131.
- α -Phenyl- β -*o*-chlorophenylethylisoquinolinium bromide, β -hydroxy-, A., 1131.
- 4-Phenyl-2-*p*-chlorophenylpyrimidine, 5-hydroxy-, A., 1133.
- s*-Phenyl-*p*-chlorophenylthiocarbamide, *p*-cyano-, and its hydroperebromide, A., 364.
- Phenyl-*N*-*p*-chlorophenylurethane, and *o*-mono- and 2:4:6-trinitro-, A., 998.
- 3-Phenyl-5-chlorostyryl- Δ^9 -cyclohexen-1-one-2-carboxylic acids, *p*-hydroxy-, ethyl esters, A., 85.
- cis*-Phenyl α -chlorostyryl ketone, and its derivatives, A., 1368.
- Phenyleinchoninic acid. See Atophan.
- α -Phenyleinchonamic acid, photo-bromination of, A., 178.
- p*-Phenylcinnamic acid, and its derivatives, A., 617.
- 4-Phenyl-2:3-coumareno-(3':2')-chromylium chloride, 7:6'-dihydroxy-, A., 1130.
- 4-Phenylcoumarin, 6-chloro-7-hydroxy-, A., 1504.
- α -Phenylcrotonaldehyde, and its derivatives, A., 750.
- α -Phenylcrotononitrile, A., 1122.
- reaction of, with hydrogen peroxide, A., 212.
- Phenylcrotylactic acid, A., 81.
- Phenylcrotylmalonic acid, and its diethyl ester, A., 81.
- β -Phenyl- α - α' -cyanobenzylpropionic acid, α -hydroxy-, A., 975.
- Phenyl-1-cyanocyclopropane, A., 1122.
- S*-Phenylcysteine, 2:4-dinitro-, A., 202.
- Phenylbibenzoylmethane diketimine. See $\alpha\beta\gamma$ -Triphenylpropane, $\alpha\gamma$ -di-imino-.
- 2-Phenyl-1:3-dibenzyltetrahydroglyoxaline, A., 337.
- 3-Phenyl-2:5-di-*p*-bromophenylfuran, A., 352.
- β -Phenyl- $\alpha\alpha$ -di-*n*-butylcarbamide, A., 1155.
- Phenyl-*o*-dicarbamic acid, cholesteryl ester, A., 210.
- Phenyldicyanamide, A., 482.
- dl*- α -Phenyl- β -diethylaminoethylamino-propan- α -ol, production of, (P.), B., 840.
- dl*- α -Phenyl- β -(β -diethylaminoethylamino)-propan- α -ol, and its oxalate, production of, (P.), B., 841.
- 10-Phenyl-9:10-dihydroglucosidone, and nitroso-, A., 1381.
- 3-Phenyl-3:4-dihydrophthalazine-4-acetic acid, 1-hydroxy-3-2'-bromo-4'-nitro-, and its esters and derivatives, A., 1253.
- 3-Phenyl-3:4-dihydrophthalazine-1-sulphonic-4-acetic acid, 3-2'-bromo-4'-nitro-, sodium hydrogen salt, A., 1253.
- 4-Phenyl-1:2-dihydroquinoline, 2-hydroxy-1-cyano-, A., 93.
- 2-Phenyl-1:4-dihydroquinoline-4-carboxylic acid, synthesis of, and its derivatives, and 4'-bromo-, and 4'-chloro-, A., 356.
- 5-Phenyldihydroresorcinol, 5-*o*-chloro-, A., 744.
- α -Phenyl- $\beta\beta$ -di(hydroxymethyl)propyl alcohol, A., 340.
- 2-Phenyl-1:3-diketotetrahydrohydrindene, A., 1246.
- 1-Phenyl-4:6-diketo-1:4:5:6-tetrahydropyridazine, A., 990.
- 1-Phenyl-4:6-diketo-1:4:5:6-tetrahydropyridazine-3-carboxylic acid, and its methyl ester and derivatives, A., 990.
- Phenyl *p*-dimethylaminophenylethyl ketone, and its oxime and hydrogen sulphate, A., 1124.
- Phenyldimethylaminopyrazolone derivatives, A., 990.
- Phenyl *p*-dimethylaminostyryl ketone, borofluorides and perchlorate of, and *p*'-chloro-, silicofluoride, A., 1124.
- 3-Phenyl-2:5-dimethyl-*p*-benzoquinone, *m*-nitro-, A., 87.
- β -Phenyl- $\beta\gamma$ -dimethylbutane, β -*p*-amino-, and its derivatives, A., 1489.
- γ -Phenyl-3:5-dimethylbutyrophonone, δ -bromo- γ -hydroxy-, A., 494.
- β - N^2 -Phenyl- N' -dimethylcarbamido-*n*-butyric acid, ethyl ester, A., 94.
- 2-Phenyl-2:3-dimethyl-2:3-dihydro-1:4-naphthaquinone, A., 1501.
- 3-Phenyl-1:6-dimethyldihydrouracil, A., 94.
- 3-Phenyl-5:7-dimethyl-1-hydrindone, 2-chloro-, and its oxime, A., 1368.
- Phenyldimethylhydroxyarsonium chloride and nitrate, A., 1138.
- 3-Phenyl-1:2-dimethylindane, 1-hydroxy-, A., 1125.
- 1-Phenyl-2:3-dimethylindene, A., 1125.
- 1-Phenyl-2:3-dimethylindene, 1-hydroxy-, A., 1233.
- 3-Phenyl-1:2-dimethylindene, 1-hydroxy-, A., 1125.
- 3-Phenyl-5:7-dimethylindone *p*-nitrophenylhydrazone, A., 1369.
- 3-Phenyl-2:6-dimethyl-1:4-naphthaquinone, A., 87.
- 10-Phenyl-2:10-dimethylphenoxarsonium iodide and *d*- α -bromocamphor- π -sulphonate, A., 1257.
- 1-Phenyl-2:3-dimethyl-4-isopropyl-5-pyrazolone, compounds of, with barbituric acids, (P.), B., 606.
- 6-Phenyl-2:5-dimethylpyridine-3-carboxylic acid, and its ethyl ester and its pierate, A., 1250.
- 3-Phenyl-2:4-dimethylthiazolium salts, A., 1511.
- s*-Phenyldimethylthiocarbamide, *s*-*p*-bromo-, A., 503.
- Phenyldi- β -naphthoxanthenyl chloride zincchloride and stannichloride, A., 487.
- o*-Phenyldiphenyls, A., 211.
- Phenyl $\beta\delta$ -diphenyl-*n*-butyl ketone, and its oxime, A., 740.
- 2-Phenyldiphenyl-2'-carboxylic acid, and its strychnine salt, A., 211.
- Phenyl $\beta\beta$ -diphenylethyl ketone, *p*-chloro-, A., 1115.
- Phenyl *p*-diphenyl ketone, *p*-amino-, and its benzoyl derivative, perchlorates of, A., 1124.
- Phenyl diphenyl thio ketone, A., 1241.
- 2-Phenyl-1:3:5-dithiazan, 4:6-diimino-, and its hydrochloride, A., 1512.
- 4-Phenyl-2:4-di-*p*-tolylpyrimidine, 5-hydroxy-, A., 1133.
- Phenylene-1:3-diacetic acid, 4:6-diamino-, diethyl ester and its derivatives, A., 759.
- 2-mono- and 2:5-di-amino-, and their derivatives, 2-nitro-, and 5-nitro-2-amino-, diethyl esters, A., 759.
- m*-Phenylenediacrylic acid, and its esters, A., 83.
- o*-Phenylenediamine, condensation of, with benzaldehyde, A., 358.
- with sugars, with formation of heterocyclic compounds, A., 224.
- tetrazotisation of, A., 742.
- m*-Phenylenediamine, reaction of, with ethylene oxide, A., 969.
- preparation of *m*-dihydrazinobenzene from, A., 482.
- preparation of disazo-dyes from, A., 743.
- p*-Phenylenediamine, use of, in photographic developers, B., 574.
- fine-grain photographic development with, B., 879.
- action of, on striated muscle, A., 1533.
- detection of, A., 877.
- Phenylenediamines, metallic amines of, A., 1087.
- m*-Phenylenediamine, reactions of, A., 227.
- m*-Phenylenedi(dichloroarsine), A., 227.
- m*-Phenylenedi(dimethylarsine), and its dihydroxybromide, A., 227.
- 9:10-*o*-Phenylenetetradecahydro-1:2:3:4-dibenzonaphthacenequinone, A., 1244.
- Phenylenetri-indolylmethane, and its pierate, A., 1379.
- Phenylethyl alcohol, antiseptic action and toxicity of organic acid esters of, B., 572.
- α -Phenylethyl alcohol, β -amino-, production of, (P.), B., 783.
- β -Phenylethyl sulphite, and its decomposition by heat, A., 63.
- Phenylethylacetic acid, hydrocarbons derived from, A., 480.
- Phenylethylacetic acid, cyano-, ethyl ester, A., 501.
- Phenylethylamine in fungi, A., 1433.
- Phenylethylamines, β -hydroxy-, and their transformations, A., 357, 1379.
- β -Phenylethylamines, A., 337.
- preparation of, from ω -nitrostyrenes, A., 1232.
- β -Phenylethylamines, amino-, preparation of, and their derivatives, A., 337.
- 4-Phenylethylamino-2:3-diphenylquinoline, A., 357.
- 4-Phenylethylamino-2-phenylquinoline, A., 357.
- Phenylethylbarbituric acid, papaverine salt. See Pavemal.
- 5-Phenyl-5-ethylbarbituric acid, and 4-imino-, A., 501.
- α -Phenyl- β -ethylbutane- $\alpha\gamma$ -diol, A., 198.
- β -Phenylethylcarbamide, 3:4-dihydroxy-, A., 1155.
- 1-Phenyl-5-ethyl-4:6-diketo-1:4:5:6-tetrahydropyridazine-3-carboxylic acid, A., 991.
- β -Phenylethyl- π -dodecylamine, and its hydrochloride, A., 70.
- Phenylethylene, and its substituted derivatives, electric moments of, A., 430.
- β -Phenylethylenediamine-3-methyl-2-aminomethyl-4-ethylquinolineplatinum salts, A., 1132.
- α -Phenylethylenediamine-3-methyl-4-ethyl-2-aminoethylquinolineplatinum salts, A., 1132.

- Phenylethylenediamineplatinum, dichloro-, A., 1132.
- β -Phenylethyl- α -ethylcarbamide, A., 1155.
- α -Phenylethylgentiobioside, β -amino-, acetyl derivative and hepta-acetate of, A., 1363.
- 4(5)-Phenyl-2-ethylglyoxaline, and its copper salt, A., 1507.
- β -Phenylethyl-*n*-heptylamine, and its hydrochloride, A., 70.
- 1- β -Phenylethyl-3:4-hexahydrobenzpyrrolidine, and its hydrochloride, A., 71.
- Phenylethylhydantoin, exchange of water, electrolytes, and heat during sickness from, A., 1411.
- 5-Phenyl-5-ethylhydantoin, 3-methyl and 1:3-dimethyl derivatives of, (P.), B., 830.
- β -Phenyl- α -ethylhydrindones, $\alpha\beta$ -dichloro-, stereoisomeric, A., 85.
- Phenyl ethyl ketone, condensation of, with formaldehyde, A., 340.
- phenylhydrazine, A., 1378.
- Phenyl ethyl ketone, *p*-chloro-, derivatives, A., 973.
- Phenylethylmethylacetic acid derivatives, relation of, to α -benzylpropionic acid derivatives, A., 1121.
- 3- β -Phenylethyl-2-methyl-4:5-benzindene, and its dipicrate, A., 1359.
- Phenylethylmethylphenylcarbinol, derivatives of, A., 745.
- 3- β -Phenylethyl-2-methylindene, and its picrate, A., 75.
- β -Phenylethyl methyl ketone, β -hydroxy-, semicarbazone, A., 981.
- β -Phenylethylmethylpyridinium bromides, β -hydroxy-, A., 1131.
- 2-Phenyl-3-ethyl- $\alpha\beta$ -naphtha-1:2:3-triazolin picrate, A., 360.
- 4- β -Phenylethyl-*Bz*-1-phenylbenzanthrone, A., 1124.
- 3- β -Phenylethylphthalic anhydride, A., 752.
- β -Phenylethylphthalimide, 4-chloro-, (P.), B., 841.
- N*-Phenyl-*N'*-ethylpiperazine, A., 1508.
- 4-Phenyl-1-ethylpiperazine, and 4-*p*-nitroso-, and its dihydrochloride, A., 629.
- β -Phenylethylpyridinium bromide, β -hydroxy- β -*p*-chloro-, -2:5-dichloro-, and -2-chloro-5-nitro-, A., 1131.
- 1- β -Phenylethylpyrrolidine, and its hydrochloride, A., 71.
- 2-Phenylethylquinazoline, 4-chloro-, A., 760.
- 2- β -Phenylethyl-4-quinazoline, A., 760.
- Phenylethylselenonium oxide, A., 875.
- N*- β -Phenylethylsuccinimide, A., 71.
- 3- β -Phenylethyl-1:2:3:6-tetrahydrophthalic acid, potassium salt, methyl esters, and anhydride of, A., 752.
- 5-Phenyl-5-ethyl-2-thiobarbituric acid, A., 1507.
- S*- α -Phenylethylthioglycollic acid, A., 1502.
- β -Phenylethyl triphenylmethyl ketone, A., 78.
- 9-Phenylflavin, A., 1134.
- 4-Phenylflavylium chloride, 7-hydroxy-4-*p*-hydroxy-, and 7:4'-dihydroxy-, and picrate, 6:7'-dihydroxy-, A., 1130.
- 9-Phenylfluorene-9-thioglycollic acid, A., 857.
- Phenylformamidinethiolacetic acid, and its hydrochloride, A., 364.
- 1-(α -Phenylfurfuryl)cyclopropane-1-carboxylic acid, 1- α -hydroxy-, ethyl ester, A., 1503.
- 3'-Phenyl-7:6-furocoumarin, A., 986.
- α -Phenyl- β -2-furylacrylic acid, and its esters and derivatives, A., 757.
- Phenyl-2-furyl-*isobutyl*carbinol, and *p*-bromo-, and *p*-chloro-, A., 626.
- Phenyl-2-furyl-ethylcarbinol, and *p*-bromo-, and *p*-chloro-, A., 626.
- α -Phenyl- β -2-furyl-*n*-hexoic acid, and its ethyl ester and derivatives, A., 757.
- α -Phenyl- β -2-furyl-*n*-hexonitrile, A., 757.
- α -Phenyl- β -2-furyl- δ -methyl-*n*-hexoic acid, and its ethyl ester and derivatives, A., 757.
- α -Phenyl- β -2-furyl- δ -methyl-*n*-hexonitrile, A., 757.
- Phenyl-2-furyl-*n*-propylcarbinol, and *p*-bromo-, and *p*-chloro-, A., 626.
- 2-Phenyl-4-furylpyrimidine, 5-hydroxy-, A., 1133.
- α -Phenyl- β -2-furylvaleric acid, and its ethyl ester and derivatives, A., 757.
- α -Phenyl- β -2-furylvaleronitrile, A., 757.
- 10-Phenylglucoside, and its derivatives, A., 1381.
- β -Phenylglucoside, 6-benzoyl derivative, A., 1354.
- α - and β -Phenylglucosides, ultra-violet absorption spectra of, A., 805.
- β -Phenylglucosidyl methyl carbonate, and its derivatives, and methyl xanthate, A., 1354.
- β -Phenylglutaconic anhydride, 2-hydroxy-, A., 353.
- S*-Phenylglutathione, 2:4-dinitro-, A., 202.
- Phenylglycine, *N*-nitroso-, and its derivatives, action of acetic anhydride on, A., 1232.
- l*-Phenylglycine glucoside, A., 332.
- Phenylglycinenitrile. See Anilinoacetonitrile.
- Phenylglycollic acid, action of thionyl chloride on, A., 747, 975.
- Phenylglyoxal osazones, A., 752.
- Phenylglyoxal, *p*-bromo-, hydrate, A., 1372.
- ω -bromo-, 4-bromo-2-nitro- and *o*-nitro-phenylhydrazones and ω -chloro-, *mono*-, *di*-, and *tri*-chloro-phenylhydrazones, A., 84.
- p*-chloro-, A., 1372.
- ω -chloro-, 2:4-dinitrophenylhydrazone, A., 206.
- Phenyl-2-glyoxalidylcarbinol, *m*-hydroxy-, and 3:4'-dihydroxy-, (P.), B., 287.
- 4(5)-Phenylglyoxaline, 4(5)-*p*-amino-, and its acetyl derivative, and -2-hydroxy-, and their copper salts, A., 1507.
- ϵ -Phenyl-*n*-heptane, *l*- α -bromo-, A., 1122.
- η -Phenylheptan- β -ol, A., 481.
- Phenylcycloheptanone, and its semicarbazone, A., 1240.
- Phenylcycloheptene, and its epoxide, A., 1240.
- l*- δ -Phenylheptoic acid, and its ethyl ester, A., 1122.
- l*- ϵ -Phenyl-*n*-heptyl alcohol, A., 1122.
- Phenyl-*n*-heptylacetic acid, cyano-, ethyl ester, A., 501.
- 5-Phenyl-5-*n*-heptylacetic acid, and 4-imino-, A., 501.
- α -Phenyl- β -*n*-heptylbutane- $\alpha\gamma$ -diol, A., 199.
- Phenyl γ -heptyl ketone, 2:4-dihydroxy-, (P.), B., 761.
- ζ -Phenyl- $\Delta^{\alpha\gamma}$ -hexadiene, A., 752.
- Phenylcyclohexane, preparation of acyl derivatives of, A., 215.
- 3-Phenylcyclohexane-1-acetic acid, A., 977.
- Phenylcyclohexane-1-aldehyde, and its semicarbazone, A., 1240.
- 1-Phenylcyclohexane-4-carboxylic acid, and its methyl ester, A., 1368.
- 3-Phenylcyclohexane-1-malonic acid, and its ethyl ester, A., 977.
- ζ -Phenylhexan- β -ol, and its phenylurethane, A., 481.
- α -Phenyl- Δ^{α} -hexenoamide, A., 212.
- Δ^{α} - α -Phenylhexen- ϵ -ol, A., 1368.
- ζ -Phenyl- Δ^{α} -hexenols, and their 3:5-dinitrobenzoate, A., 752.
- Δ^{α} - α -Phenylhexen- ϵ -one, and its semicarbazone, A., 1368.
- 3-Phenyl- Δ^2 -cyclohexenone, and its derivatives, A., 622.
- 3-Phenyl- Δ^2 -cyclohexenone-6-carboxylic acid, ethyl ester, A., 622.
- α -Phenyl- Δ^{α} -hexenonitrile, reaction of, with hydrogen peroxide, A., 212.
- Phenylcyclohexenylacetic acid, and its amide, A., 1508.
- 5-Phenyl-5-cyclohexenylbarbituric acid, A., 1507, 1508.
- Phenylcyclohexenylmalonic acid, dimethyl ester, A., 1508.
- δ -Phenylhexoic acid, and its chloride, A., 1368.
- l*- γ -Phenyl-*n*-hexoic acid, and its ethyl ester, A., 1122.
- d*- δ -Phenyl-*n*-hexyl alcohol, A., 1122.
- l*- δ -Phenyl-*n*-hexyl bromide, A., 1122.
- Phenyl-*n*-hexylacetic acid, cyano-, ethyl ester, A., 501.
- 5-Phenyl-5-*n*-hexylacetic acid, and 4-imino-, A., 501.
- 5-Phenyl-5-cyclohexylbarbituric acid, A., 1507, 1508.
- 1-Phenylcyclohexyl-4-carbinol, A., 1368.
- Phenylcyclohexylmalonic acid, dimethyl ester, A., 1508.
- α -Phenylhomophthalanilic acid, A., 1369.
- α -Phenylhomophthalic acid, A., 1369.
- 5-Phenylhydantoin, methyl and dimethyl derivatives of, (P.), B., 830.
- Phenylhydrazine, reaction of, with amino-antipyrine, A., 501.
- with chloral hydrate, A., 969.
- additive compounds of, with nickel salts of substituted acetic acids, A., 182.
- Phenylhydrazine, 2-bromo- and 2-chloro-4-nitro-, A., 344.
- 5-chloro-2-nitro-derivatives, A., 855.
- 2:4-dinitro-, as quantitative reagent for carbonyl compounds, A., 998.
- determination of camphor with, B., 253.
- α -Phenylhydrazine- β -carboxylic acid, α -5-chloro-2-nitro-, ethyl ester, A., 855.
- Phenylhydrazine-*p*-sulphonic acid, reaction of, with aldehydes, A., 491.
- Phenylhydrazinoacetonitrile, A., 72.
- Phenylhydrazinodiphenylmethane, A., 78.
- Phenylhydrazinomethanesulphonic acid, potassium salt, and its derivatives, A., 72.
- Phenylhydrazino-oxalic acid, phenylhydrazine salt, A., 608.
- 2-Phenylhydrazino-oxalyl-*d*-erythrone-lactone, A., 608.
- Phenylhydrazones, catalytic decomposition of, to substituted indoles, A., 1378.
- condensations of, with maleic anhydride, A., 1489.
- Phenylhydrazones, nitro-, action of titanous chloride on, A., 482.
- 2:4-dinitro-, A., 743.
- Phenylhydrazone-*p*-sulphonic acid, A., 1498.
- 3-Phenyl- α -hydrindone derivatives, A., 1369.
- 3-Phenyl-1-hydrindone, 2-chloro-, A., 1368.
- Phenyl- α -hydroxy- β -benzoyl-ethylsulphone, and its sodium salt, A., 1241.
- 9-Phenyl-10- α -hydroxybenzylanthracene, A., 1369.
- 2-Phenyl-3- α -hydroxybenzylcyclopropane-1-carboxylic acids, nitration of lactones of, A., 858.
- 2-Phenyl-3- α -hydroxybenzylcyclopropane-1-carboxylic acids, 2-*p*-nitro-, and their methyl esters and lactone, A., 859.

- Phenyl α -hydroxyisobutyl ketone, 2:4-dihydroxy-, A., 1371.
 α -Phenyl- γ -hydroxybutyronitrile, A., 1122.
 Phenyl- α -hydroxy- $\gamma\gamma$ -diphenylallylsulphone, A., 1241.
 2-Phenyl-3- β -hydroxy- $\beta\beta$ -diphenyl- α -methoxyethylquinoxaline, A., 982.
 Phenyl- γ -hydroxy- $\gamma\gamma$ -diphenyl- Δ^a -propenylsulphone, A., 1241.
 Phenyl- γ -hydroxy- $\gamma\gamma$ -diphenylpropylsulphone, A., 1241.
 Phenyl-2-hydroxy-1-cyclohexylsulphone, A., 729.
trans- γ -Phenyl- α -1-hydroxyhydrindene-2-butyric acid, and its inversion, A., 343.
cis- γ -Phenyl- α -1-hydroxyhydrindene-2-butyrolactones, A., 343.
trans- β -Phenyl- α -1-hydroxyhydrindene-2-propionic acid, *p*-bromo-, and its acetyl derivative, A., 343.
 Phenylhydroxylamine, nitroso-. See Cupferron.
 Phenyl β -hydroxy- β -*p*-methoxyphenylethyl ketone, semicarbazone, A., 981.
 3-Phenyl-2-(4-hydroxy-3-methoxyphenyl)-5- α -naphthyl-2:3-dihydro-1:3:4-thiadiazole, A., 1512.
 α -Phenyl- β -hydroxymethylphenylpropanes, synthesis of, and their phenylcarbamates, A., 79.
 Phenyl-2-hydroxy- α -naphthylmethylamine, reaction of, with nitrons acid, A., 97.
N-carbethoxy-derivative, A., 97.
 Phenyl β -hydroxy- β -phenylethyl ketone, and its semicarbazone, A., 981.
 3-Phenyl-2-(2-hydroxyphenyl)-5- α -naphthyl-2:3-dihydro-1:3:4-thiadiazole, A., 1512.
 2-Phenyl-4-*o*-hydroxyphenylpyrimidine, 5-hydroxy-, A., 1133.
 Phenyl- $\beta\gamma$ -dihydroxypropylamine, A., 81.
 Phenyl β -hydroxy-*n*-propyl ketone semicarbazone, A., 981.
 2-Phenylimino-4-ketotetrahydrothiazole, A., 365.
trans-4:5-Phenylimino-3:6-endomethylenehexahydrophthalic acid, derivatives of, A., 350.
 2-3'-Phenylindene-2'-hydrindane-1:3-dione, A., 1492.
 2'-(3'-Phenylindene)methylenephthalide, A., 1492.
 2-Phenylindole derivatives, A., 1250.
 2-Phenylindolone, 2-*o*-amino-, and its derivatives, A., 1133.
 Phenyl 2-indolyl ketone, *o*-hydroxy-, A., 1379.
 Phenyl 3-indolyl ketone, *o*-hydroxy-, and its derivatives, A., 1379.
 3-Phenylindone hydrazone and *p*-nitrophenylhydrazone, A., 1368.
 α -Phenyl-*p*-iodophenylthiocarbamide, *p*-bromo-, *p*-chloro-, *p*-cyano-, and *p*-nitro-, and their hydroperbromides, A., 364.
 1-Phenyl-4-keto-2:3-dimethyl-1:4-dihydronaphthalene, 1-hydroxy-, A., 1501.
 "Phenylketol," isomerisation of, and its derivatives, A., 753.
 α -Phenylmaleinil, α -cyano-, A., 1365.
 Phenyl- α -maltoside heptaacetate, A., 848.
 Phenylmercuric acetate and lactate, A., 997.
 3-Phenyl-5-mesityl-1-benzhydrylfuran, A., 494.
 δ -Phenyl- α -mesitylbnta- $\alpha\gamma$ -dione, and its monoxime, A., 494.
 Phenyl mesityl ketone, *o*-nitro-, A., 1498.
 β -Phenyl- β -mesitylpropionophenone, and its oxime, A., 493.
 Phenyl mesityl triketone, A., 1499.
 α -Phenylmethanesulphonic acid, α -amino-, and α -amino-*p*-nitro-, and their acetyl derivatives, salts, A., 72.
 n -Phenylmethoxyacetic acid, *o*-nitro-, A., 356.
 (-)-Phenylmethoxyacetoneitrile, A., 488.
 Phenyl-2-methoxy- α -naphthylmethylamine, derivatives of, A., 97.
 Phenyl *p*-methoxyphenyl ketone, *o*-nitro-, A., 1498.
 3-Phenyl-5-*p*-methoxystyryl- Δ^5 -cyclohexen-1-one-2-carboxylic acids, chloro-, ethyl esters, A., 85.
 Phenylmethylacetic acid, hydrocarbons derived from, A., 480.
 Phenyl-*N*-methylalanine, hydroxy-derivatives, A., 850.
 α -Phenylmethylamine, rotation of, and of its halogen salts, A., 568.
 4-Phenylmethylamino-2:3-diphenylquinoline, A., 357.
 4-Phenylmethylamino-2-phenyl-5:6-benzoquinoline, A., 357.
 Phenyl α -methylamino- β -phenylethyl ketone, hydrochloride, A., 209.
 4-Phenylmethylamino-2-phenylquinoline, A., 357.
 ϵ -Phenyl- γ -methyl-*n*-amyl alcohol, A., 747, 1121.
 ϵ -Phenyl- γ -methyl-*n*-amyl bromide, A., 1121.
 o -Phenylmethylarsinobenzoic acid, A., 1515.
m-Phenylmethylarsinobenzoic acid, and its salts, A., 1515.

p-Phenylmethylarsinobenzoic acid, and its salts, A., 1514.
 Phenylmethylarsinobenzoic acids, preparation and resolution of, A., 1514.
 2-Phenyl-3-methylbenzopyranol 2-ethyl ether, A., 1248.
 2-Phenyl-3-methyl-6:7-benzoylene- $\beta\beta'$ -benzo-2-pyrrolenine, 2-hydroxy-, A., 869.
 2-Phenyl-1-methylbenzthiazolium iodide and perchlorate, 2-*o*-nitro-, A., 486.
 d - α -Phenyl- β -methylbutane, A., 1122.
 δ -Phenyl- α -methyl-*n*-butane- $\alpha\alpha$ -*trans*- $\beta\gamma$ -tetracarboxylic acid, ethyl ester, A., 977.
 α -Phenyl- β -methyl-*n*-butyl alcohol, A., 1122.
 δ -Phenyl- β -methylbutyl alcohol, A., 1121.
 δ -Phenyl- β -methylbutyl bromide, A., 1121.
 Phenylmethyl-*n*-butylcarbinol, manufacture of, (P.), B., 348.
 γ -Phenyl- α -methylbutyric acid, and its ethyl ester, A., 1121.
 Phenylmethylcarbamic acid, β -chloroethyl ester, A., 1228.
 β - N^2 -Phenyl- N^1 -methylcarbamido-*n*-butyric acid, and its ethyl ester, A., 94.
 β - N^2 -Phenyl- N^1 -methylcarbamido- β -phenylpropionic acid, ethyl ester, A., 94.
 β - N^2 -Phenyl- N^1 -methylearbamidopropionic acid, methyl ester, A., 94.
 Phenylmethylcarbamylcholine chloride, and its auric and platonic chloride compounds, A., 1228.
l- α -Phenyl- β -methyl-diethylaminoethylaminopropan- α -ol, and its ketone, production of, (P.), B., 840.
 3-Phenylmethyl-dihydroureacils, A., 94.
 Phenylmethylethylarsine, *p*-bromo-, and its derivatives, A., 875.
 9-Phenyl-3-methylflavin, A., 1134.
N-Phenyl-*N*-methylformamidine hydrochloride, A., 966.
 Phenylmethylformamidinethiolacetic acid, and its hydrochloride, A., 365.
 β -Phenyl- α -methylglutaric acids, α -cyano-, and their derivatives, A., 490.
 α -Phenyl- β -methylglycidamide, A., 1122.
 Phenylmethylglyoxime, *p*-chloro-, and its nickel derivative, A., 980.
 ζ -Phenyl- δ -methyl- Δ^{47} -hexadiene, A., 752.
 ζ -Phenyl- β -methylhexan- β -ol, phenylurethane from, A., 481.
 ζ -Phenyl- δ -methyl- Δ^a -hexen- δ -ol, and its 3:5-dinitrobenzoate, A., 752.
 β -Phenyl- α -methylhydrindones, $\alpha\beta$ -dichloro-, stereoisomeric, A., 85.
 1-Phenyl-2-methylindene, 1-hydroxy-, A., 1233.
 3-Phenyl-2-methylindene, 1-chloro-, and 1-hydroxy-, acetyl derivative, A., 1233.
 2-Phenyl-1-methylindole, 3-nitroso-, A., 1250.
 2-Phenyl-3-methylindole, and its picrate, A., 1378.
 2-Phenylmethylindoles, and their derivatives, A., 1251.
 Phenyl 3-methyl-1- and -2-indolyl ketones, *o*-hydroxy-, A., 1379.
 2-Phenyl-3-methyl- $\alpha\beta$ -naphtha-1:2:3-triazolium methosulphate, A., 360.
 ϵ -Phenyl- γ -methylpentane, A., 1121.
 α -Phenyl- γ -methylpentanols, and their phenylurethanes, A., 481.
 α -Phenyl- δ -methylpentan- α -ol, β -amino-, and its hydrochloride, production of, (P.), B., 783.
 δ -Phenyl- β -methyl- Δ^a -pental, and its semicarbazone, A., 745.
 δ -Phenyl- β -methyl- Δ^a -*n*-pentaenoic acid, and its calcium salt, A., 747.
 α -Phenyl- β -methyl- Δ^b -pentaen- δ -one, A., 745.
 10-Phenyl-2-methylphenoxarsine, A., 1257.
 3-Phenyl-1-methylphthalaz-4-one, 2'-bromo-4'-nitro-, A., 1253.
 3-Phenyl-4-methylphthalaz-1-one, 2'-bromo-4'-amino-, and nitro-, A., 1253.
N-Phenyl-*N'*-methylpiperazine, A., 1508.
 4-Phenyl-1-methylpiperazine, and its salts, A., 629.
 γ -Phenyl- β -methyl- Δ^a -propene, γ -*p*-bromo-, A., 1115.
 α -Phenyl- β -methyl- Δ^a -isopropenol, production of, (P.), B., 1130.
 Phenylmethyl- Δ^b -propenylpyridinium bromide, α -hydroxy-, and α -hydroxy-*o*-chloro-, and *o*-nitro-, A., 1131.
 Phenylmethyl- Δ^b -propenylisoquinolinium bromide, α -hydroxy-*o*-chloro-, and *o*- and *m*-nitro-, A., 1131.
 β -Phenyl- α -methylpropionamide, A., 977.
 Phenylmethyl-*n*-propylpyridinium bromide and perchlorate, α -hydroxy-, A., 1131.
 3-Phenyl-1-methylpyrazole-5-carboxylic acid, methyl esters, A., 1381.
 3-Phenyl-5-methylpyrazole-1-carboxylic acid, and 4-chloro-, methyl esters, A., 1380.
 5-Phenyl-3-methylpyrazole-1-carboxylic acid, and 4-chloro-, methyl esters, A., 1380.
 1-Phenyl-3-methyl-5-pyrazolone, action of ammonia on fluoran from, A., 1385.
 action of hydrogen peroxide on, A., 1380.
 β -1-Phenyl-3-methyl-4-pyrazolylcrotonic acid, β -5-hydroxy-, ethyl ester, A., 1508.
 β -1-Phenyl-3-methyl-4-pyrazolylcrotonolactone, β -5-hydroxy-, A., 1508.
 6-Phenyl-2-methylpyridine-3-carboxylic acid, and its salts and methylbetaine, A., 1250.
 4-Phenyl-6-methyl-2-pyridone, 3-cyano-, A., 1250.
 6-Phenyl-4-methyl-2-pyridone-3-carboxylamide, A., 1250.
 4-Phenyl-2-methyl- Δ^2 -pyrroline, and its picrate, A., 355.

- 2-Phenyl-5-methylquinoline, 4-hydroxy-, A., 223, 357.
- 2-Phenyl-6-methylquinoline, 4-hydroxy-2-*p*-hydroxy-, A., 357.
- Phenylmethylselenonium oxide, A., 875.
- Phenyl *o*-methylstyryl ketone, A., 492.
- 3-Phenyl-4-methyl-3:4:5:6-tetrahydro-4-carboline methiodide, A., 499.
- Phenylmethylthiazolidone-2-thiocarbamide, and its benzylidene derivative, A., 1512.
- 3-Phenyl-4-methylthiazolium iodide, A., 1511.
- 1-Phenyl-3-methyl-4:5-thionaphthenopyrazoles, and 1-*p*-bromo-, A., 763.
- 3-Phenyl- α -methyl- α -trans- β -*g*-tricarboxylic acid, A., 977.
- 3-Phenyl- β -methyl-*n*-valeraldehyde, and its semicarbazone, A., 747.
- 3-Phenyl- β -methylvaleric acid, and its ethyl ester, A., 1121.
- and β -hydroxy-, ethyl esters, A., 747.
- 3-Phenyl- β -methyl- γ -valerolactone, A., 747.
- Phenylmethylvinylethylcarbinol, manufacture of, (P.), B., 347.
- "*l*-Phenylmyrtenyl alcohol," A., 1376.
- 2-Phenyl-naphthalene-5:2'-dialdehyde, formation of, from homophthalaldehyde, A., 1123.
- 2-Phenyl-naphthapyranol, A., 1248.
- 3-Phenyl- β -naphthaquinoline-1-carboxylic acid, A., 501.
- N*-Phenyl-naphthastyril, A., 618.
- Phenyl- β -naphthylamine, production of, B., 182.
- 2:5-Phenyl-naphthylaminoterephthalic acids, and their salts, A., 992.
- Phenyl- α -naphthylcarbamie acid, dialkyl-aminoalkyl esters, preparation of, A., 482.
- Phenyl- α -naphthylcarbamyl chloride, A., 482.
- 3-Phenyl-5- α -naphthyl-2:3-dihydro-1:3:4-thiadiazole, A., 1512.
- 4-Phenyl-2- β -naphthylpyrimidine, 5-hydroxy-, A., 1133.
- 2-Phenyl-4-(6'-nitro-3':4'-dimethoxybenzylidene)-1:3:5-oxazolone, A., 747.
- aci*-Phenyl-nitromethane, *p*-bromo-, methyl ether, A., 334.
- Phenyl-*p*-nitrophenylarsinic acid, and its salts, A., 1514.
- N*-Phenyl-*N*-2:4-dinitrophenylpiperazine, A., 358.
- 2-Phenyl-4-*m*-nitrophenylpyrimidine, 5-hydroxy-, A., 1133.
- 4-Phenyl-2-*p*-nitrophenylpyrimidine, 5-hydroxy-, A., 1133.
- 1-Phenyl-2-*o*-nitrophenylthiazolium iodide, A., 1511.
- Phenyl γ -nitro-*n*-propyl ketone, A., 355.
- "Phenyl-nitrosohydroxylamines ferric oxide," A., 750.
- Phenyl α -oximinoethyl ketone, *o*-hydroxy-, and its benzoyl derivative, A., 85.
- α -Phenyl-*n*-pentane, $\alpha\beta$ -tribromo-, A., 626.
- γ -Phenyl-*n*-pentane, A., 480.
- 3-Phenyl-*n*-pentane, *l*- α -bromo-, A., 1122.
- 1-Phenylcyclopentane-3-carboxylic acid, and its derivatives, A., 1368.
- α -Phenylpentan- β -ol, and its phenylurethane, A., 481.
- ϵ -Phenylpentan- β -ol, and its phenylurethane, A., 481.
- α -Phenyl- Δ^4 -pentene, ϵ -bromo-, A., 626.
- 4-(α -Phenylphenacyl)flavene, A., 1377.
- 4-(α -Phenylphenacyl)flavylum ferrichloride, A., 1377.
- 4-(α -Phenylphenacylidene)flavene, A., 1377.
- p*-Phenylphenacylpyridinium bromide, additive compound of, A., 987.
- p*-Phenylphenacylquinolinium bromide, A., 988.
- p*-Phenylphenacylisoquinolinium bromide, A., 988.
- p*-Phenylphenacylquinoliniumenol-betaine, A., 988.
- p*-Phenylphenacylisoquinoliniumenol-betaine, A., 988.
- Phenylphenanthrylcarbinols, A., 622.
- N*-Phenylphenoxazium, 2:4-dinitro-*N*-2':4'-dinitro-, A., 1491.
- 6-Phenylphenoxazine, 3-nitro-6-dinitro-, A., 1491.
- 4-Phenyl- β -1-phenylbenzanthrone, A., 1124.
- Phenyl β -phenyl- β -*p*-bromophenylethyl ketone, *p*-bromo-, A., 1115.
- Phenyl β -phenyl- β -*tert*-butylvinyl ketone, and its oxime, A., 862.
- N*-Phenyl-*p*-phenylenediamine, *N*-5'-chloro-2'-nitro-, and its hydrochloride and derivatives, A., 855.
- Phenyl- β -phenylethynyl-*tert*-butylcarbinol, and chloro-, A., 612.
- 2-Phenyl-5- β -phenylethylindoline, 6-amino-, and its derivatives, A., 1505.
- α -Phenyl- β -(β' -phenylethyl)- β -methylhydrazine, and its hydrochloride, A., 1119, 1360.
- s*-Phenylphenylsuccinic acid, *o*-chloro-, and its diamide, A., 213.
- Phenylphosphorous acid, methyl ester, and its derivatives, A., 228.
- Phenylphosphosalicylic acid, hydrolysis of, and its barium salt, A., 343.
- 3-Phenylphthalaz-1-one, 2'-bromo-4'-amino-, A., 1253.
- 2'-bromo-4'-nitro-, A., 1253.
- N*-Phenylphthalimidine, 2'-bromo-4'-amino-, A., 1253.
- N*-Phenylpiperazine, derivatives of, A., 358.
- reaction of chloroacetic acid derivatives and, A., 1253.
- N*-Phenylpiperazine-*N*-acetic acid, esters and derivatives, A., 1253.
- N*-Phenylpiperazine-*N*-acetic acid, and its ethyl ester, salts of, A., 358.
- α -Phenyl- γ -3-piperidylpropane, A., 499.
- Phenylprocarine, A., 1155.
- β -Phenylpropaldehyde, $\alpha\beta$ -dibromo-, 2-bromo-4-nitrophenylhydrazones, $\omega\alpha\beta$ -tribromo-, *di*- and *tri*-bromo-, *p*-nitro-, and 2-bromo-4-nitro-phenylhydrazones, and $\omega\alpha\beta$ -trichloro-, *di*- and *tri*-chloro-, and 2-bromo-4-nitro-phenylhydrazones, A., 344.
- α -Phenylpropane, (+) β -amino-, (+) β -bromo-, (—) β -chloro-, (—) β -cyano-, and (—) β -thiocyano-, A., 1230.
- γ -Phenyl- Δ^2 -propenyldiethylamine, γ -chloro-, and its salts, A., 997.
- Phenyl isopropenyl ketone, production of, (P.), B., 1130.
- Phenylpropionoltriphenylmethylhydrazide, A., 78.
- Phenylpropionylazotriphenylmethane, A., 78.
- α -Phenylpropionyl- β -triphenylmethylhydrazine, and its derivatives, A., 1125.
- β -Phenylpropionic acid, α -amino-, See Phenylalanine.
- m*-amino-, hydrochloride, A., 337.
- β -*m*- and *p*-bromo-, A., 488.
- Phenylpropionic nitrophenylcarbamie anhydrides, A., 336.
- Phenylpropion-*m*-nitroanilide, A., 336.
- N*- β -Phenylpropionylantranilic acid, A., 760.
- β -Phenylpropionylazotriphenylmethane, A., 78.
- β -Phenylpropionylmesitylene, A., 199.
- α -(β -Phenylpropionyl)- β -triphenylmethylhydrazine, and its derivatives, A., 1125.
- β -Phenylpropionophenone, β -hydroxy- β -*o*-chloro-, A., 984.
- α -Phenylpropyl alcohol, β -amino-, preparation of, A., 209.
- (—) α -Phenyl- β -propyl phenyl sulphide, A., 1230.
- (—) β -Phenylisopropyl disulphide, A., 1230.
- Phenylisopropylacetic acid, cyano-, ethyl ester, A., 501.
- β -(α -Phenylpropyl)aminoethane, α -amino-, and its derivatives, A., 855.
- 5-Phenyl-5-isopropylbarbituric acid, and 4-imino-, A., 501.
- γ -Phenylpropylmethylamine, β -hydroxy-, and its hydrochloride, A., 81.
- 4(5)-Phenyl-2-isopropylglyoxaline, and its copper salt, A., 1507.
- 2-Phenyl-4-isopropylideneoxazolone, A., 756.
- Phenyl isopropyl ketone, condensation of, with formaldehyde, A., 341.
- γ -Phenylpropylmethylamine, β -hydroxy-, and its hydrochloride, A., 81.
- β -Phenyl-*n*-propyl methyl ketone, γ -amino-, benzoyl derivative, A., 355.
- 4-Phenyl-1-*n*-propylpiperazine, and its hydrobromide, A., 629.
- (—) α -Phenyl- β -propylthiol, A., 1230.
- Phenylpyrazoles, 4-chloro-, and their salts, A., 1380.
- 3- and 5-Phenylpyrazole-1-carboxylic acids, and 4-chloro-, methyl esters, A., 1380.
- 1-Phenylpyridinium perchlorate, 1-*p*-hydroxy-, and its salts and derivatives, A., 1505.
- 9-Phenyl-3:4-pyridino-7:8:9-triazole, and its derivatives, and *p*-amino-, acetyl derivative, A., 226.
- 1-Phenyl-3-2'-pyridylpyrazolone, 1-*p*-nitro-, A., 1253.
- 1-Phenyl-3-(3'-pyridyl)-5-pyrazolone, A., 96.
- 2-Phenylpyrimidine, 7-thiol-9-hydroxy-, A., 762.
- 2-Phenylpyrimidine-4-carboxylic acid, 5-hydroxy-, A., 1133.
- 1-Phenylpyrrolone, 1-2':4'-dinitro-, A., 868.
- 2-Phenyl- Δ^2 -pyrrolone, and its picrate, A., 355.
- Phenylpyruvic acid, and its condensation product with phenylacetoneitrile, A., 975.
- hydrogenation of, A., 488.
- Phenylpyruvic acid, *o*-nitro-, ethyl ester, oxime, and its *p*-toluenesulphonate, A., 345.
- 2-Phenylquinoline derivatives, synthesis and transformation of, A., 357.
- 2-Phenylquinoline, 2'- and 3'-amino-, and their derivatives, A., 1251.
- 4-cyano-, A., 93.
- 4:6-dihydroxy-, and its dimethyl ether, and 4-hydroxy-*p*-hydroxy-, A., 357.
- 4-Phenylquinolines, substituted, picrates of, A., 766.
- 1-Phenylisoquinoline-2'-carboxylic acid, and its picrate, production of, (P.), B., 841.
- 1-Phenylisoquinoline-2'-carboxylic acid, 4'-chloro-, and 7-chloro-, production of, (P.), B., 841.
- 2-Phenylquinoline-4-carboxylic acid, and its derivatives, manufacture of esters of, (P.), B., 974.
- glyceryl, γ -chloro- β -hydroxypropyl, γ -chloro- $\alpha\beta$ -propanediol and $\beta\beta'$ -dichloroisopropyl esters of, (P.), B., 974.
- See also Atophan.
- 2-Phenylquinoline-4-carboxylic acid, 2'- and 3'-amino-, and their esters, A., 1251.
- 3-Phenylquinoline-2'-carboxylic acid, and its sodium salt, A., 1381.

- Phenylsamiandiol, and its derivatives, A., 98.
- Phenylsamiandiones, isomeric, and their derivatives, A., 98.
- Phenylselenenic acid, 2,4-dinitro-, A., 1257.
- Phenylseleninic acid, bromo-*o*-amino-, benzoyl derivative, and *o*-nitro-, A., 1257.
- 3-Phenylseleno- Δ^3 -cyclopentene 1:1-dioxide, A., 100.
- Phenylsemicarbazide, 5-chloro-2-nitro-, A., 855.
- Phenylstearic acid, production of, (P.), B., 762.
- Phenylstibinic acid, 3-chloro-, and 5-nitro-, and their chlorides, and 5-hydroxy-, A., 876.
- 2-Phenyl-5-styryl-1-ethylindoline, 6-amino-, ethiodide of, A., 1505.
- 2-Phenyl-5-styrylindoline, 6-amino-, and its salts and derivatives, A., 1505.
- Phenyl styryl ketones (*chalkones*), absorption spectra of, A., 218.
- and their oxidation to flavones, A., 1129.
- 3-Phenyl-2-styryl-5- α -naphthyl-2:3-dihydro-1:3:4-thiadiazole, A., 1512.
- 2-Phenyl-1-styrylthiazolinium iodide, 2-*o*-nitro-, A., 1511.
- α' -Phenylsuccinil, α -cyano-, A., 1365.
- Phenylsuccinic acid series, A., 489.
- Phenylsuccinic anhydride, condensation of, with veratrole, A., 1495.
- Phenylsulphinylphenylacetic acids, A., 488.
- α -Phenylsulphinylphenylacetic acids, optical isomerism of, A., 974.
- d*-Phenylsulphinylphenylacetic acids, optical isomerism of, A., 487.
- α -Phenylsulphoxypropionic acid, diastereoisomeric forms of, A., 970.
- 2-Phenyl-1:4:4':9'-tetrahydroanthraquinone, (P.), B., 622.
- 4-Phenyl-1:2:3:4-tetrahydroanthraquinone-1-carboxylic acid, methyl ester, A., 752.
- 2-Phenyl- Δ^3 -tetrahydrobenzaldehyde, and its sodium bisulphite compound, A., 978.
- Phenyltetrahydrobenzoic acids, A., 978.
- 3-Phenyl-3:4:5:6-tetrahydrocarboline, and its hydrochloride, A., 499.
- γ -Phenyl- α -tetrahydrofurylpropan- $\alpha\gamma$ -diol, A., 199.
- γ -Phenyl- α -tetrahydrofurylpropan- α -ol, A., 199.
- 3-Phenyl-3:4:5:6-tetrahydronorharman, and its hydrochloride, A., 1388.
- 2-Phenyltetrahydropyran, and 3-bromo-, A., 626.
- 1-Phenyl-1:4:5:6-tetrahydropyridazine-4:6-dione, 5-bromo-, A., 991.
- 2-Phenyl- Δ^3 -tetrahydrotoluene, A., 978.
- Phenyl- β 88-tetraphenyl- Δ^4 -butenyl ketone, A., 493.
- 4-Phenylthiazole, 2-amino-4-(3':4'-dihydroxy-), and its acetyl derivative, A., 1511.
- 3-Phenyl-4-thiazolidone-2-thiolmethyl- β -thiocarbamide, and its benzylidene derivative, A., 1512.
- β -Phenylthioacetyl- α -phenyl- α -8-dimethylhydrazine, A., 1119.
- β -Phenylthioacetyl- α -phenyl- β -methylhydrazine, and its benzoyl derivative, A., 1119.
- Phenylidithiobiuret, *m*-amino-, *p*-bromo-, *m*-chloro-, and *p*-iodo-, A., 1488.
- Phenylthiocarbimide, action of, on insulin, A., 411.
- Phenylthiocarbimide, *p*-bromo-, use of, in identification of amines, A., 206.
- Phenyl-*p*-thiocyanophenylarsinic acid, A., 228.
- Phenyl-*p*-thiocyanophenylcarbamide, A., 1488.
- Phenyl-*p*-thiocyano-*o*-tolylcarbamide, A., 1488.
- p*-Phenylthiolbenzophenone, *p*-hydroxy-, A., 483.
- 5-Phenylthiol-4'-ethoxyazobenzene, 2-hydroxy-, A., 1360.
- N*-Phenylthiol-*o*-toluidide, *N*-*o'*-nitro-, A., 1359.
- Phenylthioxanthanyl chloride zincchloride, ferrichloride, and stannichloride, A., 487.
- Phenylthymol. See α -Phenyl- β -hydroxymethylphenylpropane.
- 2:5-Phenyl-*o*-tolylaminoterephthalic acid, and its ammonium salt, A., 992.
- 2:5-Phenyl-*p*-tolylaminoterephthalic acid, A., 992.
- Phenyl-*p*-tolylbenzylcarbinol, A., 85.
- Phenyl-*o*-tolylcarbamide, *p*-thiocyano-, A., 1488.
- Phenyl-*p*-tolyl-2-furylcarbinol, A., 626.
- Phenyl-*p*-tolylglycollic acid, synthesis of, A., 975.
- (+)-Phenyl-*p*-tolylglycollic acid, and its ethyl ester, A., 489.
- Phenyl-*p*-tolyl ketone, *o*-nitro-, A., 1498.
- Phenyl-*o*-tolylmethylarsine, A., 1515.
- Phenyl-*m*-tolylmethylarsine, A., 1514.
- Phenyl-*p*-tolylmethylarsine, A., 1514.
- Phenyl-*p*-tolylmethylarsine, *p*-bromo-, A., 875.
- 2-Phenyl-4-*p*-tolylpyrimidine, 5-hydroxy-, A., 1133.
- 4-Phenyl-2-*m*-tolylpyrimidine, 5-chloro-, and 5-hydroxy-, A., 1133.
- 4-Phenyl-2-*p*-tolylpyrimidine, 5-hydroxy-, and 5-hydroxy-4-5'-bromo-2'-hydroxy-, -4-*o*-hydroxy-, and -4-*m*-nitro-, A., 1133.
- 8-Phenyl-*p*-tolylthiocarbamide, *p*-cyano-, and *p*-iodo-, and their hydroperbromides, A., 364.
- 2-Phenyl-4-*p*-tolyl-1:2:3-triazole, 5-amino-, benzoyl derivative, A., 763.
- Phenyltriazine, aminohydroxy-, salts of, A., 1254.
- dihydroxy-, and its derivatives, A., 870.
- Phenyltriethylsilicane, nitration of, A., 1258.
- Phenyltrimethylammonium chloride, *p*-amino-, and *p*-chloro-, derivatives of, A., 368.
- iodide, *p*-hydroxy-, reaction of, with nitric acid, and 5-iodo-3-nitro-, salts, A., 339.
- salts, and their reduction by sodium amalgam, A., 76.
- 2-Phenyl-1:6:6-trimethyl-4-piperidone, 3-amino-, and its hydrochloride and oxime *p*-toluenesulphonate, (P.), B., 796.
- Phenyl 2:4:6-trimethylstyryl ketone, and its dibromide, A., 493.
- 2-Phenyl-3-triphenylmethylindole, A., 1250.
- 1-Phenyluracil, A., 358.
- 1-Phenyluracil-5-carboxylic acid, A., 358.
- β -Phenylvaleric acid, *l*-ethyl ester, A., 1122.
- l*- β -Phenyl-*n*-valeric acid, A., 480.
- l*- γ -Phenyl-*n*-valeric acid, and its ethyl ester, A., 1122.
- α -Phenyl- γ -veratrylbutyric acid, A., 1495.
- α -Phenyl- β -vinylethylene glycol, dehydration of hydrobenzoin of, A., 750.
- Phenyl vinyl ketone, additive reactions of, A., 1124.
- addition of compounds with reactive methylene groups to, A., 622.
- β -Phenyl- α -vinylpropionic acid, A., 975.
- β -Phenyl- β -vinylpropionic acid, A., 1483.
- Phenylxanthanyl chloride zincchloride, ferrichloride, and stannichloride, and perchlorate, A., 487.
- Phenyl-*p*-xylyl ketone, *o*-amino-, A., 1498.
- Phenyl xylyl ketones, *o*-nitro-, A., 1498.
- Phlobaphens, A., 906.
- Phlobatannins, natural, absorption spectra of, A., 218.
- Phloridzin, excretion of creatinine, glucose, and urea after administration of, A., 117.
- inhibition of fat absorption by, A., 524.
- destruction of, by muscles of dogs *in vitro*, A., 653.
- Phloracetophenone 2:4-dinitrophenylhydrazone, A., 90.
- Phloroglucinol, condensation of, with adip- and glutar-dinitriles, A., 1372.
- with furfuraldehyde and with methylfurfuraldehyde, A., 769.
- detection of, A., 1474.
- Phaladidea penita*, oxidase in crystalline style of, A., 1398.
- Phosgenite, crystal structure of, A., 571.
- Phosphatase, A., 251, 402, 660, 784, 1026, 1149, 1280.
- specificity of, A., 122, 1280.
- restriction of, by sulphur compounds, A., 1280.
- hydrolysis of mono- and di-phosphates by, A., 660.
- active, in dog faeces, A., 1279.
- of animal tissues, influence of electrolytes on, A., 534.
- in blood and urine, A., 534, 1164.
- bone, effect of solar radiation on, A., 1280.
- hydrolysis of hexose diphosphates by, A., 660.
- effect of ganglionic sympathectomy on, A., 1279.
- action of thyroxine on, A., 540.
- in rat's bones, A., 1164.
- in fowls, A., 243.
- in fungi, A., 1280.
- intestinal, activation of, by magnesium, A., 1280.
- of marine invertebrates, A., 660.
- plasma, action of thyroxine on, A., 540.
- in normal and rachitic children, A., 1279.
- determination of, A., 122.
- of urine, A., 1268, 1279.
- yeast. See under Yeast.
- determination of, in bile and serum, A., 403.
- in plasma and serum, A., 403.
- Phosphate rock, decomposition of, by root excretions of lupins, B., 566.
- by root excretions of plants, B., 566.
- influence of ammonium sulphate and sodium nitrate on action of, in soils, B., 566.
- effect of fluorine on availability to plants of phosphorus in, B., 1109.
- use of, as filler in fertilisers, B., 116.
- control of crystal size of gypsum from, (P.), B., 899.
- as food for swine, A., 654.
- raw, nutrient value of, B., 1157.
- Phosphates. See under Phosphorus.
- Phosphatase, A., 534.
- Phosphatides, A., 384, 645, 1265.
- auto-complex coacervates of, and their relation to the photoplasmic membrane, A., 1321.
- powdered preparation from, (P.), B., 1166.
- iodine values of, in relation to neutral salts, A., 1523.
- oxygen, uptake of, A., 376.
- resorption of, in the organism, A., 523.
- plant, clear sols from, A., 822.
- Phosphides, crystal structure of, A., 17, 920.

- Phosphine.** See Phosphorus trihydride.
- Phosphoaminolipins,** extraction of, from serum, A., 1261.
- Phosphocholine,** and its pierate, from ox-liver, A., 1265.
- Phosphocreatine** in brain, A., 1265.
- Phosphoesterases,** differentiation of two, A., 402.
- from liver, and their separation, A., 251.
- Phosphoglyceric acid,** dephosphorylation of, in fluoride-poisoned muscle, A., 1150.
- action of, with hæmolyzed erythrocytes and with tissue juices, A., 403.
- significance of, for glycolysis in muscle, A., 250.
- as phosphate donator in muscle, A., 387.
- optically active, production of, by glycolysis in muscle, A., 250.
- d*(-)-3-Phosphoglyceric acid, preparation of, A., 1418.
- l*-Phosphoglyceric acid, action of animal tissues on, A., 521, 1016.
- Phosphoglyceric acids,** isomeric, isolation of, from fermentation solutions, A., 659.
- salts, crystalline and gelatinous, A., 1349.
- α - and β -Phosphoglyceric acids, synthesis of, A., 471.
- Phosphoglyceromutase,** separation of, from enolase, A., 1418.
- Phosphogypsum,** use of, as fertiliser, B., 689.
- production of ammonium sulphate from, B., 492, 671.
- production of sulphur trioxide and cement from, B., 671.
- Phosphohexokinase,** A., 660.
- Phospho-*l*-lactic acid,** and its barium salt, A., 731.
- hydrolysis of, by phosphatase, A., 1280.
- Phospholipins,** ampholytic nature of, A., 703.
- role of, in flavour of milk, B., 570.
- distribution of, in cream, B., 571.
- metabolism of. See under Metabolism.
- effect of thyroxine on content of, in blood, liver, and muscle, A., 1171.
- in muscle, A., 109.
- in heparinised and oxalated plasma, A., 880.
- determination in, of blood, A., 1142.
- Phosphomolybdates,** amino-acid salts, microscopy of, A., 1516.
- Phosphomolybdic acid,** detection of caesium and potassium with, A., 185.
- Phosphopyruvic acid,** formation of, from *l*-phosphoglyceric acid, A., 1016.
- enzymic fermentation of, A., 1418.
- enol-Phosphopyruvic acid,** synthesis of, A., 731.
- Phosphors,** light-dark effect with, A., 1055.
- alkaline-earth, photoelectric effect of, in the ultra-violet region, A., 282.
- calcium sulphide, coloration of, by light, A., 457.
- dye, photoluminescence of, A., 682.
- Lenard, A., 429.
- phosphorescence of, A., 915.
- organic, preparation of, from calcium phosphate, A., 312.
- synthetic, A., 282.
- zinc, fading of, in single crystals, A., 1302.
- Phosphor-bronze,** production of castings of, B., 411.
- Phosphorescence,** A., 565.
- law of decay of, A., 1055.
- cathodic, A., 915.
- Phosphorescent substances,** preparation of, A., 313, 565, 1470.
- Phosphoric acid.** See under Phosphorus.
- Phosphorites,** roasting, grinding, and magnetic separation of, B., 493.
- acid decomposition of, B., 60.
- citric acid-soluble phosphate in, B., 493.
- mixed organic acids as solvents for, B., 402.
- porphyrins in, A., 727.
- Lahn, utilisation of, B., 451.
- determination in, of fluorine, A., 1336; B., 60, 723.
- of phosphoric acid and total sesquioxides, B., 60.
- Phosphorous acid.** See under Phosphorus.
- Phosphorus,** recovery of, from gases, (P.), B., 452, 495*.
- from phosphates, (P.), B., 724.
- condensation of, from gases, B., 493.
- utilisation of carbon monoxide from electro-distillation of, B., 21.
- thermal distillation of, from phosphates, B., 1091.
- Raman spectrum of, A., 1445.
- absorption of oxygen by, A., 181.
- diffusion of, in iron and steel, A., 692.
- and its oxides, equilibrium of, with iron and its oxides, A., 1077.
- oxidation of, with water, in presence of alkali, A., 460.
- assimilation of, from various phosphates, A., 393.
- in blood, A., 1393.
- in diet, A., 1036.
- effect of changes in blood-sugar and liver-glycogen on distribution of, in rabbit livers, A., 1172.
- in serum, effect of calcium, parathormone, and phosphorus in diet on, A., 409.
- resorption and excretion of, A., 1531.
- effect of phosphatic substances on balance of, in animals, A., 1274.
- poisoning by. See under Poisoning.
- black, effect of high pressures on, A., 567.
- black and red, crystal structure of, A., 919.
- organic, in blood, A., 642.
- yellow, fused, viscosity and density of, A., 22.
- detection of, electroscopically, A., 1337.
- Phosphorus alloys,** with iron, magnetic, manufacture of, (P.), B., 235.
- Phosphorus compounds,** with rhenium, A., 302.
- in dogs, A., 521.
- Phosphorus pentamide,** structure of, A., 1057.
- tribromide,** preparation of, A., 715.
- preparation of alkyl bromides with, A., 1348.
- trichloride,** hydrolysis of, A., 1333.
- pentachloride,** structure of, A., 1057.
- action of liquid ammonia on, A., 945.
- dichloronitride,** tetrameride, action of ammonia on, A., 592.
- chloro- and hydroxy-nitrides and nitrides,** A., 833.
- trihydride (phosphine),** Raman spectrum of, A., 428, 1445.
- vibration frequencies of, A., 685.
- effect of inert gases on explosion limit of mixtures of oxygen and, A., 307.
- green flame of, A., 1443.
- photochemical oxidation of, A., 47.
- additive compounds of, with cuprous and silver halides, A., 49.
- detection of, A., 1472.
- diiodide,** hydrolysis of, A., 715.
- Phosphorus nitride,** preparation and properties of, A., 1090.
- band spectrum of, A., 679.
- monoxide,** ultra-violet absorption spectrum of, A., 561.
- pentoxide,** allotropy of, A., 1470.
- oxychloride.** See Phosphoryl chloride.
- pentasulphide,** action of, on aliphatic ketones, A., 1107.
- Tetraphosphorus trisulphide,** detection of, in phosphorus, A., 1337.
- Phosphorus sulphides,** valency chemistry of, A., 1327.
- analysis of, A., 1337.
- Phosphorus acids,** stereochemistry of, A., 569.
- Phosphoric acid,** manufacture of, (P.), B., 61, 187.
- at Wilson Dam, Ala., B., 766.
- purification of, (P.), B., 146.
- electrochemical purification of, B., 1042.
- Raman spectrum of, A., 914.
- viscosity of, A., 290.
- heat capacity of aqueous solutions of, A., 705.
- vapour pressure of solutions of, A., 694, 1318.
- as condensing agent, A., 614.
- oxidation of toluene in aqueous-etheral solutions of, A., 1114.
- corrosion of metals by, B., 809.
- flocculation of animal sera, A., 644.
- effect of phenolic esterification on antirachitic power of, A., 109.
- effect of bile acids on excretion of, in bile, A., 512.
- exchange of, in blood of pregnant women, A., 237.
- removal of, in qualitative micro-analysis, A., 1337.
- determination of, by citrate method, B., 304.
- in presence of arsenic acid and iron, A., 1472.
- in solutions containing calcium, volumetrically, A., 718.
- in nitrophoska containing lime, B., 1091.
- in phosphorites, B., 60.
- in soils, colorimetrically, B., 198.
- by Dirk's method, B., 37.
- in water, microchemically, B., 176.
- Phosphoric acids,** Raman effect in, A., 564.
- Phosphates,** physical chemistry of production of, B., 304.
- structure and anti-corrosive properties of coatings of, on metals, B., 809.
- action of, on hexoses, A., 734.
- availability of, in soils, B., 688.
- effect of open and closed carbohydrate chains on antirachitic activity of, A., 657.
- activated transformation of, during glycolysis, A., 1418.
- excretion of, by kidneys, A., 1267.
- calcined, nutrient value of phosphorus in, B., 966.
- mineral, concentration of, (P.), B., 1092.
- senonian, A., 1102.
- natural, purification of, (P.), B., 187.
- flotation of, (P.), B., 629.
- of Dandaragan, W.A., A., 1479.
- senonian, from Syria, A., 842.
- slag, manurial trials with, B., 602.
- removal of, by washing in analysis, B., 723.
- elimination of, in qualitative analysis, A., 718.
- colour reaction of, A., 1337.

Phosphorus:—

Phosphates, determination of, potentiometrically, A., 1337.
volumetrically, A., 1215.
in presence of metals, A., 56.
in milk, volumetrically, B., 873.
in soils, B., 865.
in water, with ceruleomolybdate, A., 836.
determination in, of fluorine, B., 493.
Phosphate ions, determination and separation of metal ions and, A., 1337.
Hypophosphoric acid, constitution of, A., 149.
preparation of, A., 715.
determination of, in presence of phosphoric and phosphorous acids, potentiometrically, A., 948.
Orthophosphates, determination of, by titration with lead acetate, A., 836.
Metaphosphoric acid, determination of proteins with, A., 300.
Pyrophosphates, electrodeposition of metals from solutions of, A., 1330.
fused, metal displacement equilibria in, A., 168.
Phosphorous acid, preparation of, A., 480.
photochemical reaction of, with uranyl salts, A., 177.
Hypophosphorous acid, photochemical reaction of, with uranyl salts, A., 177.
Triphosphonitrilic chloride, crystal structure of, A., 1450.
Phosphorus organic compounds, tautomerism of, A., 72.
aromatic, possible antirachitic activity of, A., 547.
Dithiophosphoric acid, esters, manufacture of vulcanisation accelerators from, (P.), B., 92.
Orthophosphoric acid, di-esters, hydrolysis of, A., 471.
Phosphoric acid, production of trialkyl esters of, (P.), B., 938.
Pyrophosphoric acid, esters, manufacture of, (P.), B., 92.
Phosphorus detection and determination:—
detection of, A., 1215, 1472.
in organic compounds, A., 1140.
determination of, by Kjeldahl's method using selenium, A., 595.
spectrographically, A., 719.
with the step-photometer, A., 596.
preparation of biological material for, A., 906, 1044.
in aluminium, B., 272.
in presence of arsenic, iron, nitrates, and silica, colorimetrically, A., 1092.
in blood, clinically, A., 880.
with the step-photometer, A., 1001.
sodium fluoride as anticoagulant in, A., 509.
in blood-serum, A., 509.
in feces, A., 1525.
in iron and steel, B., 64.
in milk, microchemically, A., 512.
in organic compounds, A., 369.
in phosphate, hypophosphite, and glycerophosphate syrups, B., 252.
in drinking water, B., 384.
in wheat, B., 1018.
lipin-, determination of, in blood, A., 509.
Phosphoryl chloride, production of, B., 849.
Phosphorylation, relation of, to oxidation-reduction, A., 250.
d- α -(2)-Phosphorylglyceric acid, A., 250.
Phosphosiderite, A., 842.
Phosphotungstic acid, amino-acid salts, microscopy of, A., 1516.

Phospho-12-tungstic acid, precipitation of cystines by, A., 1356.
cesium salt, crystal structure of, A., 920.
Phospho-18-tungstic acid, colour reactions of, A., 1111.
Phosphovanillin reaction, A., 647.
Photobiological sensitisation and desensitisation in the ultra-violet, A., 1275.
Photocatalysis, negative, A., 1468.
Photochemical oxidation, metastable active oxygen molecule in, A., 1211.
processes, study of, by means of electro-optical Kerr effect, A., 188.
free atoms and radicals in, A., 1211.
reactions, A., 177.
primary, A., 48, 713, 1468.
studies, A., 10, 178, 561, 1331.
Photochemistry, A., 177.
Photo-electric cathodes. See under Cathodes.
cells. See Cells, photo-electric.
colorimeters. See under Colorimeters.
conductors, A., 722.
counter for use with adsorbed films, A., 697.
effect, A., 148.
long-wave limit of, and atomic number of elements, A., 4.
temperature dependence of, A., 1191.
in crystals, effect of magnetic field on, A., 429.
of metals, A., 139.
at metal surfaces, effect of temperature on, A., 12.
from metal to dielectric, effect of medium on, A., 1293.
of composite photo-cathodes, A., 147.
external, and chemical constitution, A., 147.
and light distribution, A., 1191.
nuclear, A., 1293.
selective, A., 1191.
extinction, apparatus for measurement of, A., 722.
absolute and relative, measurement of, A., 9.
layers, spectral sensitivity of, A., 1447.
Photo-electrodes, organic, A., 1463.
Photo-electrons, velocity of, in thin metal foils, A., 139.
production of images with, A., 139.
Photograms, apparatus for conversion of, into intensity curves, A., 320.
Photographs, X-ray. Laue, illuminator for printing, A., 1340.
Photographic articles, manufacture of, (P.), B., 382.
baths, (P.), B., 783.
blackening, relation between intensity of copper α -radiation and, A., 1331.
bleaching-out effect of atmospheric oxygen on, A., 1331.
blue-prints, developers and intensifiers for, (P.), B., 175.
manufacture of paper and cloth for, (P.), B., 46.
copying, (P.), B., 1070.
with zinc plates, (P.), B., 334.
density surfaces shown by physical development, A., 712.
desensitisation, theory of, A., 1331.
developers, B., 701; (P.), B., 655, 751, 831, 925, 975.
reduction potential of, and development of latent image, B., 701.
influence of alkali on reducing power of, B., 254.
oxidation of, by silver bromide, B., 333.
effect of thioacetyl derivatives of amines on, B., 879.

Photographic developers, use of *p*-phenylenediamine in, B., 574.
sensitometry of, B., 1166.
colour, control of contrast with, (P.), B., 126.
fine-grain, B., 574.
pyrocatechol, without sulphite, B., 574.
developers and emulsions, rôle of, in fine grain production, B., 925.
developing baths, reactions in, A., 1088.
development, A., 712, 1331.
old process for, B., 575.
mechanism of, A., 831.
action of ascorbic acid in, A., 712.
acceleration of, by thiocarbamide, B., 655.
compensational, A., 177.
fine-grain, B., 1167.
theory of, B., 526.
in concentrated metal, B., 478.
with *p*-phenylenediamine, B., 879.
metol-quinol, chemistry of, B., 750.
ultra-fine grain, B., 1069.
elements, processing of, (P.), B., 1070.
coating for, (P.), B., 125.
emulsions, B., 701; (P.), B., 255, 334, 525.
preparation and resolving power of, B., 525.
production of, B., 525; (P.), B., 1070.
treatment of, (P.), B., 126.
bleaching-out of, B., 750.
blackening of, by X-rays, A., 177; B., 783.
graininess of, B., 1069, 1166.
graininess and resolving power of, B., 175.
ripening of, B., 783.
physical chemistry of, B., 525, 574.
retarders and promoters for, B., 830.
sensitisation of, (P.), B., 79, 334.
sensitisers for, B., 525; (P.), B., 526.
dye sensitisers for, (P.), B., 702, 843, 942.
colour sensitometry of, B., 478, 574.
sensitivity of, in relation to p_H , A., 712.
influence of cations on, A., 712.
effect of silver iodide on, B., 878.
effect of washing on, B., 525.
influence of water on, A., 831.
modification of, (P.), B., 879.
desensitising dyes for, B., 298.
absolute colour-sensitivity of, B., 925.
setting media for, (P.), B., 702.
solarisation of, B., 1166.
production of coloured images in single layers of, (P.), B., 831.
coloured fog in, B., 525.
fog inhibitors for, (P.), B., 206.
Schwarzschild effect in, B., 525.
effect of alkali iodides on, A., 712.
action of cystine in, B., 478.
gelatin for, B., 783, 1069.
effect of hydrolysis of gelatin on, B., 574.
decomposition of silver-gelatin complex in, A., 712.
silver salts of dyes for, B., 333.
stabilisation of, (P.), B., 126.
DIN and Scheiner speed numbers for, B., 287.
for reversal, B., 525.
highly-sensitive, influence of cystine on, B., 878.
mixed, sensitometry of, B., 574.
silver halide, manufacture of, (P.), B., 607.
production of gradations in development of, (P.), B., 702.

Photographic emulsions, silver halide, sensitisation of, (P.), B., 46, 334, 1069.
 sensitisers for, (P.), B., 783, 975.
 grain isolation in, by dyes, B., 607.
 silver-silver chloride, physical changes in, A., 1211.
 exposure, photo-electric measurement of, B., 574.
 German standard DIN 4512 for, B., 574.
 intermittent, and Herschel effect, B., 750.
 influence of salts on, A., 177.
 ultra-short, A., 47.
 films, (P.), B., 750, 975.
 production of, (P.), B., 125.
 treatment of, (P.), B., 526.
 effect of low-voltage cathode rays on, A., 1332.
 deformation of, B., 1069.
 determination of light-filter factor of, by counter-wedge difference method, B., 575.
 fixing of, on rigid supports, (P.), B., 1023.
 manufacture of supports for, from cellulose derivatives, (P.), B., 491.
 manufacture of ground-glass surface on supports for, (P.), B., 575.
 colour, (P.), B., 206.
 incised, (P.), B., 255.
 lenticular, manufacture of, (P.), B., 1119.
 colour-record, copying images on, (P.), B., 703.
 metallic, (P.), B., 975.
 mosaic tricolour, reduction of positives of, B., 878.
 non-curling, manufacture of, (P.), B., 1167.
 non-halation, (P.), B., 125.
 X-ray, (P.), B., 750.
 manufacture and properties of, B., 1069.
 Schumann, double-coated, B., 1023.
 fixing, B., 655.
 fixing baths, (P.), B., 925.
 chemistry of, B., 430.
 regeneration of, B., 526, 575.
 fixing and hardening baths, (P.), B., 975.
 goods, wrapping paper for, (P.), B., 185.
 hypersensitisation, B., 574.
 images, production of, B., 525; (P.), B., 382.
 reflexion densitometer for, B., 125.
 colloid chemical-topochemical relations in, A., 580.
 dyes for, (P.), B., 206.
 reduction of, (P.), B., 334.
 bleach-out, by diffuse after-exposure, A., 590.
 coloured, production of, (P.), B., 783.
 by development, (P.), B., 702.
 dyed, production of, (P.), B., 46, 126, 382, 575.
 latent, micellar theory of, A., 832.
 action of aqueous solutions on, A., 943.
 action of water on, A., 311.
 multicolour, preparation of, by Gaspar colour process, A., 575.
 production of, (P.), B., 1070.
 natural-coloured, production of, on paper, films, etc., (P.), B., 925.
 residual, chemistry of, B., 575.
 layers, (P.), B., 382.
 production of, from diazonium compounds, (P.), B., 1023.
 electrolytic development of, A., 458.

Photographic layers, intermediate layers for, (P.), B., 975.
 fogging of, by dyes, B., 607.
 titanium organic salts for, (P.), B., 430.
 antihalation, (P.), B., 206.
 effect of, on sensitivity, B., 525.
 bleaching-out, (P.), B., 879.
 line-printing, (P.), B., 1119.
 materials, for scientific use, B., 525.
 coloured, production of, (P.), B., 655, 783, 1024.
 negatives, production of, with diazonium compounds, (P.), B., 1070.
 by reversal, (P.), B., 1070.
 ideal colour sensitivity of materials for, A., 458.
 removal of water-marks from, B., 479.
 retouching of, (P.), B., 830.
 over-sensitisation, B., 607.
 paper, production of, (P.), B., 925.
 treatment of, after sensitising, (P.), B., 185.
 fixing and stop-baths for, B., 655.
 characteristic curves of, B., 526.
 quality of printing on, B., 79.
 ferro-prussiate, manufacture of, (P.), B., 702.
 pigment, B., 750.
 papers and cloths, production of, (P.), B., 479.
 pictures, of high brilliancy, (P.), B., 255.
 plates, manufacture of, (P.), B., 254.
 densitisation of, A., 177.
 physical development of, after iodisation, B., 574.
 blackening of, by very slow electrons, A., 311.
 by ultrasonic waves, A., 458.
 fogging of, by dyes, B., 783.
 colour layer for, (P.), B., 382.
 branched tracks of α -particles on, A., 6.
 effect of metals, etc., on, A., 47.
 action of elements and compounds on, A., 1087.
 for use in astronomy and spectroscopy, B., 525.
 for scientific photography, B., 750.
 infra-red, water effect in, A., 311.
 prints, permanence of, B., 701.
 coloured, materials for, (P.), B., 1069.
 diazotype, production of, (P.), B., 702, 831, 1119.
 multicolour, production of, (P.), B., 925.
 tanned, production of, (P.), B., 1024.
 two-colour, manufacture of, on double-coated film, (P.), B., 382.
 printing, (P.), B., 288, 1119.
 of lenticular colour-record films, (P.), B., 1167.
 printing fabric, manufacture of, (P.), B., 334.
 printing formes, shellac solutions for, (P.), B., 34.
 printing paper, manufacture of, (P.), B., 1119.
 reproduction, (P.), B., 751.
 Dufay colour process for, B., 175.
 on aluminium and its alloys, (P.), B., 46, 1119.
 reversal, A., 1331.
 higher order, A., 47.
 sensitisation, with mixed dyes, B., 525.
 by "Herschel treatment," B., 1069.
 sensitisers, chemistry of, B., 574.
 dichromates of organic bases as, B., 1167.
 dyes for, (P.), B., 175.
 for silver salts, adsorption of, A., 697.

Photographic sensitisers, gelatin, analysis of, B., 1023.
 infra-red, A., 634.
 sensitivity, relation of, to p_H , A., 712.
 effect of pressure on, A., 712.
 Scheiner and DIN, relation between, B., 478.
 sensitometry, B., 830.
 addition law of, B., 702.
 solarisation at low intensity, A., 1211.
 threshold, and radiation quantum, A., 4.
 toning, with selenosulphates, B., 430.
Photography, problems and progress in, B., 254.
 physical chemistry in, B., 1023.
 Agfa graduated colour chart for, B., 975.
 contrast variation with chromium intensifier in, B., 1069.
 cyanine dyes for use in, (P.), B., 15.
 diffusion of dyes in gelatin in hydrotype process of, B., 574.
 colloidal electrolytes in, A., 311.
 artificial light sources in, A., 713.
 on aluminium by Seo-Foto process, B., 1023.
 in far ultra-violet, B., 925.
 in wool research, B., 843.
 colour, (P.), B., 126, 175, 206, 255, 430, 703, 783, 975, 1070, 1167.
 problems of, B., 287.
 apparatus for, (P.), B., 47.
 grating-dispersion-prism device for, (P.), B., 1070.
 multicolour screens for, (P.), B., 206.
 device for copying lenticular screen images in, (P.), B., 751.
 projection printing in, (P.), B., 207.
 correct registration in, (P.), B., 1070.
 with key print, (P.), B., 925.
 infra-red, applications of, B., 702.
 beyond 10,000 Å., B., 1119.
 multicolour, toning of red images in, (P.), B., 382.
 polychromatic, (P.), B., 702.
 rapid, for television, etc., (P.), B., 831.
 X-ray, (P.), B., 925.
 three-colour, (P.), B., 126.
 reflexion density of metal mirrors in, B., 175.
 screens for, B., 525.
Photomagnetism, A., 915.
Photomechanical reproduction, sensitisation of colloids for, (P.), B., 125.
 resists, (P.), B., 255, 479.
Photometers, magnesium oxychloride screens and test plates for, A., 951.
 for weak fluorescent sources, A., 839.
 for transmission and reflexion densities, B., 382.
 micro-, continuous current amplifier for, A., 9.
 combined densitometer, comparator, and, A., 188.
 recording, A., 951.
 self-registering, A., 188, 320.
 photo-electric, for use in colorimetry, A., 1097.
 α -ray, integrating, for X-ray crystal analysis, A., 1340.
 Zeiss, uses of, B., 129.
 Zeiss step-, colorimetric analysis of foods with, B., 379.
Photometry, precision, A., 188.
Photomicrography, outfit for, A., 1217.
Photons, theory of, A., 679.
 energy density and theory of, A., 143.
 preparation of visible light counters for, A., 1217.
 sensitivity of counters for, A., 722.
 equation for, A., 912.

- Photons, spin of, A., 9.
in biology and chemistry, A., 1023.
- Photophoresis at high gas pressures, A., 801.
- Photosensitisation of animals in S. Africa, A., 383.
- Photosynthesis, kinetics of, A., 178, 794, 1212.
relation between chlorophyll content and rate of, A., 794.
effect of deuterium oxide on rate of, A., 1177.
fluctuations in, A., 1177.
law of limiting factors and concept of relative minimum applied to, A., 1288.
inorganic, A., 1331.
- Phototropic compounds, A., 497.
- Phthal-2-anilic acid, 3-nitro-, A., 976.
- Phthalanilideamides, 3-nitro-, A., 976.
- Phthalein, and its derivatives, absorption spectra of, A., 82.
- Phthalhydrazide, 3-amino-, chemiluminescence of, A., 1469.
- Phthalic acid, salts, A., 92.
and 3- and 4-nitro-, esters, saponification of, A., 828.
benzyl ethyl and β -phenylethyl ethyl esters, (P.), B., 1132.
bishydroxymethyl, acetoxymethyl, ethylene, α -dicarbethoxyethylene, and $\beta\beta$ -iminodiethyl esters, B., 161.
ethyl ester, reaction of, with magnesylypyrrole, A., 627.
determination of, in essential oils, B., 573.
 β -ethylbutyl ester, (P.), B., 262, 715.
ethylene glycol, quinol, and glycerol hydrogen esters, production of, (P.), B., 762.
methyl α -carboethoxyethyl ester, (P.), B., 716.
determination of, in its esters and alkylid resins, B., 1151.
- Phthalic acid, 3:4-dichloro-, diethyl and ethyl hydrogen esters, and 3:6-dichloro-, methyl ester, A., 1123.
3-nitro-, basic lead salts, manufacture of, (P.), B., 751.
- isoPhthalic acid, 2:4:6-tribromo-, A., 751.
- 4:6-dinitro-, and its esters and dichloride, A., 619.
- ψ -Phthalic acid, dimethyl ester, and 3:4-dichloro-, diethyl ester, and 3:6-dichloro-, dimethyl ester, A., 1123.
- Phthalic anhydride, purification of, (P.), B., 140.
condensation of, with amino-alcohols, A., 619.
with naphthaquinone, A., 1243.
reaction of, with amino-picoline and -pyridine, A., 92.
with magnesium derivative of 2:4-dimethylpyrrole, A., 221.
- Phthalic anhydride, tetraido-, preparation of, A., 343.
- Phthalide, and its derivatives, absorption spectra of, A., 82.
- Phthalimide, manufacture of, (P.), B., 443, 621.
- Phthalimide, N-bromo-, and N-chloro-, additive compounds of, with pyridine, A., 355.
- Phthalimidoacetic acid, methyl ester and derivatives, A., 860.
- Phthalimido- $\Delta\beta$ -butenylmalonic acid, ethyl ester, A., 1228.
- γ -Phthalimido- β -hydroxybutyronitrile, fate of, in animals, A., 1154.
- δ -Phthalimido- γ -hydroxy- α -carbethoxyvaleric acid, α -bromo-, ethyl ester, A., 606.
- γ -Phthalimido- β -hydroxy- n -propyl-2-methylpyridinium salts, A., 1118.
- δ -Phthalimido- γ -hydroxyvaleric acid, α -bromo-, A., 606.
- γ -Phthalimido- α -methylacetoacetic acid, ethyl ester, A., 860.
- 1-Phthalimidonaphthalene, 4-bromo-, A., 1490.
- Phthal- γ -menthylamic acid, A., 89.
- Phthal- γ -menthylamide, A., 89.
- Phthalocyanines, X-ray structure of, A., 813.
metallic, mol. wt. of, A., 689.
magnetic susceptibilities of, A., 924.
- Phthalocyanine dyes, manufacture of, (P.), B., 15.
- Phthalones, constitution of, A., 758.
- Phthalyl chloride, 3:6-dichloro-derivatives, A., 1123.
- ψ -Phthalyl chloride, 3:4-dichloro-, A., 1123.
- Phthalylsemicarbazide derivatives, A., 619.
- Phthiocol, fluorescence of, A., 1028.
- Phycomyces, growth-factor content of spores of, A., 1039.
vitamin- B_1 as growth substance for, A., 1175.
effect of vitamin- B_1 on nitrogenous metabolism of, A., 1540.
- Phycomyces blakesleeanus, synthesis of growth factor by, A., 256.
 β -carotene from, A., 406.
- Phyllochlorin, A., 1382.
and its methyl ester and its copper salt, A., 1383.
- Phylloclada vitellinae, control of, B., 822.
- Phylloerythrin, 10-hydroxy-, benzoyl derivative, A., 1383.
- Phylloperthia horticola, control of, in grassland, B., 822.
- Phyllophora, Black Sea, agar-agar from, B., 828.
- Physics, borders of, A., 651.
atomic, A., 803.
nuclear, high-voltage technique for, A., 1296.
- Physical chemistry, patent law in, B., 977.
- Physin, effect of, on growth of pigs, A., 1175.
- Physiological activity and structure, A., 792.
experiments, apparatus for, A., 1552.
- Physoid acid, constitution of, A., 490, 1234.
- Physostigmine. See Eserine.
- Phytochemistry, A., 672, 797.
- Phytohormones, A., 265.
- Phytophthora cactorum, effect of auxins on, A., 1548.
- Phytophthora infestans, prevention of infection of seed potatoes with, B., 691.
- Phytosterol oleate and stearate, A., 487.
- Phytosterolin from slash-pine, A., 864.
- Picea excelsa, Latvian, oil from needles of, B., 1023.
- Piceol, chloro-, A., 1485.
- Piceoside, A., 906.
- Piceoside, chloro-, A., 1485.
- Pickles, manufacture of, B., 251.
blackening of, due to *Bacillus nigricans*, B., 120.
- Pickling, treatment of spent acid solutions from, (P.), B., 147.
- Pickling salt, determination in, of nitrites, B., 304.
- α -Picoline, refractive index and isomerism of, A., 680.
effect of unipolar substituents on action of, with benzyl bromide, A., 710.
action of, with γ -chloro- β -hydroxy- α -propylphthalimide, A., 1118.
- α -Picoline, 6-amino-, reaction of, with phthalic anhydride, A., 92.
3:6-diamino-, production of, (P.), B., 894.
- N-6- α -Picolinophthalimide, A., 92.
- α -Picolinoylbutyrolactone, A., 988.
- γ -Picolinoylpropionic acid, ethyl ester, and its derivatives, A., 988.
- 3-Picolinoylpyrrolid-2-one, and its mercurichloride, A., 988.
- α -2-Picolinoylsuccinimethylimide, and its picrate, A., 988.
- 2-Picolylacetic acid, α -oximino-, ethyl ester, A., 1253.
- 5- β -Picolyl-5- n -butylbarbituric acid, A., 1504.
- 5- β -Picolyl-5-ethylbarbituric acid, A., 1504.
- 5- β -Picolyl-5- n -propylbarbituric acid, A., 1504.
- Picric acid, separation of, from 2:4:6-trinitrobenzoic acid, B., 664.
physical properties of, with varying μ , A., 1072.
adsorption of, by silica gel, A., 696.
equilibrium of, with dinitronaphthalene, A., 302.
complexes of aniline and, A., 166.
salts, anodic processes during electrolysis of, A., 1205.
thermal analysis of, B., 382.
amino-acid salts, microscopy of, A., 1516.
ammonium salt, as fixative in intra-vital staining, A., 906.
silver salt, antiseptic action of, A., 126.
- Picrolonic acid, determination of thorium with, A., 464.
- Picrotic acid, constitution of, A., 1236.
degradation of, and its derivatives, A., 1496.
- Picrotin, C-skeleton of, A., 1236.
- Picrotoxin, A., 1236, 1496.
preparation of, A., 983.
aromatic rearrangement products of, A., 1364.
- Picrotoxinin, C-skeleton of, A., 1236.
- N-Picrylphenoxazine, 2-nitro-, A., 1491.
- Pies, testing of flour for, B., 651.
- Piezo-electric crystals, X-ray diagrams of, A., 570.
- Piezometric researches, A., 688.
- Pigs, growth of, A., 1274.
effect of amount of feeding on required protein level in foods for, B., 653.
feeding value of herring meals for, B., 78.
feeding of, with herring and other fish meals, B., 922.
with sweet-lupin seeds, B., 875.
digestibility of ground sweet-lupin seeds for, B., 522.
digestibility of maize by, B., 971.
feeding of, with ordinary and germinated oats, B., 476.
with phosphate rock, A., 654.
fattening of, with fish meals, B., 379.
with vitamin- A and $-D$ supplements, B., 285.
production of soft pork by, after feeding with soya beans, B., 972.
body-fats of, A., 233.
influence of rape oil feed on fat of, B., 172.
effect of growth and diet on carcass quality of, B., 781.
calcium, phosphorus, and vitamin- D requirements of, A., 393.
nitrogen balance of, fed with dried yeast, soya-bean, and groundnut cake, B., 78.
growing, addition of calcium and phosphorus to grain feeding-stuffs for, B., 699.
feeding value of coarse and standard rice bran for, B., 827.
calcium and phosphorus exchange in, A., 893.
retention of protein by, B., 922.

- Pigeons**, synthesis of uric acid in, A., 1407.
- Pigments**, manufacture of, (P.), B., 367.
 from 1-nitroso- β -naphthol, (P.), B., 239.
 granulometric composition of, B., 913.
 separation and floating of, in paints, B., 913.
 dryers for, (P.), B., 289.
 physical and chemical properties of, B., 366.
 dispersion of, B., 32; (P.), B., 161, 1103.
 effects of wetting agents on, B., 32.
 oil absorption of, B., 465.
 relation between oil absorption and particle size of, B., 561.
 oil dispersions of, (P.), B., 1152.
 staining power of, in paints and vitreous enamels, B., 774.
 manufacture of azo-dyes for, (P.), B., 1086.
 chromate dry colours as, B., 109.
 production of ferrosiferrous oxide for, (P.), B., 1092.
 for colouring of slate, tiles, etc., (P.), B., 815.
 for use in paper manufacture, B., 447.
 for rubber, (P.), B., 797.
 for rubber, plastics, paints, etc., (P.), B., 860.
 examination of, in ultra-red light, B., 774.
 standardisation of, (P.), B., 941.
 anti-rust, lead chromates as, B., 913.
 basic lead carbonate and zinc oxide, colloidal chemistry of, B., 959.
 black, white, and coloured, B., 510.
 British, B., 913.
 cadmium, production of, (P.), B., 466.
 calcium fluoride, manufacture of, (P.), B., 110.
 carbon, nomenclature of, B., 465.
 carbon black, production of, (P.), B., 914.
 carotene, production of, (P.), B., 914.
 cellulosic, production of, (P.), B., 562.
 ceramic, B., 561.
 coated with protective colloids, manufacture of, (P.), B., 110.
 coloured, B., 69.
 manufacture of, from organic carbonaceous earths, (P.), B., 15.
 cuprous oxide, production of, (P.), B., 914.
 iron oxide, (P.), B., 367.
 colour stability of, B., 598.
 irradiated, absorption of oxygen by, A., 1087.
 luminous, B., 913.
 new, for paints, B., 815.
 non-metallic, for paints, B., 860.
 organic, detection of, in foods, B., 521.
 powdered, manufacture of, (P.), B., 815.
 rust-protecting, iron hammer-scale as, B., 641.
 spinel, structure and stability of, B., 561.
 titanium, (P.), B., 1103.
 production of, (P.), B., 161, 226, 562.
 and their use in paper-making, B., 959.
 production and properties of, B., 509, 510.
 containing barium sulphate, production of, (P.), B., 543.
 titanium dioxide, B., 109.
 determination in, of chromium, B., 69.
 titanium phosphate, manufacture of, (P.), B., 511.
 white, B., 1004.
 detection of, B., 319.
 zinc, manufacture of, (P.), B., 511.
 durability of, in Southern America, B., 959.
 antiseptic action of, in paper stocks, B., 184.
- Pigments**, zinc chromate, B., 860, 913.
 zinc sulphide, for interior paints, B., 598.
 coated, (P.), B., 735.
 testing of, B., 598.
 detection of, B., 319.
 microchemical detection of, B., 815.
 determination of critical oil requirement of, B., 774.
- Pilchard** oil, effect of hydrogenation on composition of, B., 683.
 bodying of, B., 159.
 vitamin-D potency of, A., 1036.
- Pilocarpine**, effect of, on alkali reserve and blood-sugar, A., 641.
 and its salts, determination of, A., 877, 1141.
- Pilocarpine alkaloids**, action of, on alkali reserve and blood-sugar, A., 1018.
- r*-Pilopaldehyde, A., 872.
- r*-Pilopic acid, resolution of, A., 872.
- r*-Piloconitrite, A., 872.
- r*-Pilopyl alcohol, A., 872.
- r*-Pilopyl chloride and iodide, A., 872.
- d*-Pilopyl diazomethyl ketone, A., 872.
- Pimelanilido-*pp*-diarsinic acid, and its sodium salt and acid chloride, A., 768.
- Pimelic acid, preparation of, A., 196.
- Pimento, perfection, red pigment in, A., 1040.
- Pinacols, cyclic, A., 86.
- Pinacol-pinacolone rearrangement, A., 973.
- Pinacولات, alkali, dissociation of, A., 84.
- Pinacryptol-yellow, synthesis of, B., 298.
- $\Delta^{1,5}$ -Pinadiene, A., 1376.
 synthesis of nopinene and, from pinene, A., 624.
- Pinane, slow combustion of, A., 1375.
- Pinastric acid, reduction of, A., 1238.
- Pine, acids of oleoresin and rosin of, A., 495.
 active charcoal from, B., 85.
 digger, phytochemistry of seed of, B., 1054.
 non-heptane constituents of, A., 1180.
 sterol from, A., 797.
 loblolly and peeled shortleaf, blue-stain in pulpwood of, B., 1039.
 slash-, fatty constituents of phloem of, A., 864.
 Southern American, for rayon manufacture, B., 666.
- Pine bark**, extraction and sulphiting of, B., 686.
- Pine lignin**. See under Lignin.
- Pine needles**, eucalyptus oil in, B., 973.
 vitamin-C content and fruit conserves from, B., 171.
- Pine oil**, B., 829.
 separation of components of, (P.), B., 333.
 oxidation of, B., 524.
 recovery of anethole from, (P.), B., 878.
 isolation of *dl*-fenchol from, A., 349.
 use of, in soaps, B., 597.
 American and French, B., 524.
 from Finnish pines, B., 701.
 French, B., 606.
- Pine resin**, American, acids of, B., 1372.
- Pine trees**, damping-off of tap roots of, B., 567.
 chlorosis of, B., 1158.
- Pine wood**, swelling of, A., 165.
 lignin of. See under Lignin.
 cause of blue stain of, B., 357.
 blue stain of, caused by *Ceratostomella piceae*, B., 852.
 hydrolysis and fermentation of sawdust from, B., 1064.
 American, manufacture of cellulose for rayon silk from, B., 398.
- Pineal body**, function of, A., 542.
- Pineapples**, carotene and xanthophyll in, A., 1040.
 control of bacterial rots of, in the Philippines, B., 1110.
 of British Guiana, B., 875.
- Pineapple juice**, prevention of discoloration of cut fruit by, B., 1162.
 determination in, of sugar, B., 1020.
- Pineapple plants**, errors in field experiments with, B., 166.
 relation between nitrogen fertilisation and chlorophyll in, A., 905.
- Pinene**, natural and magnetic rotatory power of, A., 283.
 synthesis of camphor from, A., 496.
 synthesis of nopinene and $\Delta^{1,5}$ -pinadiene from, A., 624.
 pyrolysis of, A., 1127.
 hydrochloride, Grignard compound of, and its reaction with ethylene oxide, A., 219.
- d*-Pinene, dipole moment of, A., 694.
 adduct of, with phenyl azide, A., 350.
- α -Pinene, isomerisation of, A., 496.
 autooxidation of, and related catalysts, A., 754.
 oxide, isomerisation of, during Reformatsky's reaction, A., 1245.
 identity of, with *alloocimene*, A., 89.
- l*- β -Pinene, anomalous rotatory dispersion of, A., 1447.
- α - and β -Pinenes, optical rotation of, in ultra-violet, A., 684.
- Pinene glycol**, products of reaction of, with hydrogen bromide, in acetic acid, A., 349.
- Pinenitrobenzylamine**, spontaneous resolution of, A., 89.
- Pinic acid**, active, A., 1375.
- Pinocampheols**, and their derivatives, A., 349.
- Pinocamphone**, alcohol from, by reaction with acetylene, and its silver salt, A., 349.
- Pinocamphones**, and their derivatives, A., 349.
- d*-Pinocarveol, A., 349.
- Pinoresinol**, and its derivatives, A., 218.
 and its relation to eudesmin, A., 627.
- Pinus**, growth of, in relation to mycorrhiza, B., 968.
- Pinus caribaea*. See Pine, slash-.
- Pinus insignis*, use of wood of, for paper-making, B., 1039.
- Pinus pumila*, vegetable oil from, B., 31.
- Pinus radiata*, manufacture of paper from, B., 489.
- Pinus sabiniana*. See Pine, digger.
- Pinus silvestris*, oxidisability of turpentine from, B., 31.
 Latvian, oil from needles of, B., 1023.
- Pipes**, tubular fittings for connecting of, (P.), B., 910.
 prevention of corrosion of, (P.), B., 315.
 cathodic protection of, B., 459.
 from soil corrosion, B., 1048.
 protective coatings and sheaths for, (P.), B., 639.
 prevention of explosions in, B., 837.
 cement, resistance of, to acids, B., 1096.
 drainage, use of lead alloys in, B., 1024.
 sewer. See Sewer pipes.
 underground, protective coatings for, B., 1146.
- Piper chaba*, piperine in, A., 1434.
- Piperazine**, A., 1253, 1508.
 reactions of, with unsaturated esters, A., 502.
 and its derivatives, with chloroacetic acid, A., 1133.
 derivatives, A., 502, 1133.

- Piperazines, *N*-monoalkylated, synthesis of, A., 629.
- Piperazine-1:4-diacetamide, A., 1133.
- Piperazine-1:4-diacetic acid, and its salts and esters, A., 1133.
- Piperazine-1:4-diacetonitrile, A., 1133.
- N,N'*-Piperazinobis-succinic acid, esters, A., 502.
- Piperidine, formation of, by reduction of pyridine in presence of nickel, A., 757.
- free energy change in hydrogenation of pyridine to, A., 1462.
- as catalyst in condensation of aromatic aldehydes with hydantoins, A., 628.
- action of, with allylthiocarbimide, A., 934.
- with halogenonitrobenzenes, A., 1113.
- dipyrrocatechol borate, and its 2-methyl derivative, (P.), B., 841.
- flavinate, A., 639.
- Piperidines, 2- and 2:6-substituted, reactivities of, A., 987.
- Piperidine-1-carboxylic acid, butyl and phenyl esters, A., 71.
- Piperidine-2:3-dicarboxylic acid, ethyl ester, hydrochloride, A., 92.
- Piperidine-2:6-dicarboxylic acid, diethyl ester, A., 987.
- 3-Piperidinoacetyldibenzfuran, and its hydrochloride, A., 986.
- 9-Piperidinoacetyl-1:2:3:4:5:6:7:8-octahydrophenanthrene, and its salts, A., 973.
- 1-Piperidinobenzthiazole, manufacture of, (P.), B., 444.
- α -Piperidinobutane, γ -amino-, and γ -chloro-, and their salts, A., 478.
- α -Piperidinobutylene, and its picrate, A., 478.
- 2-Piperidinodibenzfuran, A., 986.
- α -Piperidino- γ -dimethylaminobutane, and its salts, A., 478.
- Piperidinodimethylarsine, A., 1139.
- 2- γ -Piperidino- β -dimethylpropylaminopyridine, (P.), B., 940.
- Piperidinoephidrin, A., 202.
- 1- β -Piperidinoethoxydibenzfuran, and its hydrochloride, A., 986.
- 3- β -Piperidino- α -ethoxyethylidibenzfuran, A., 986.
- Piperidinoethylchloroarsine, A., 1139.
- 2- β -Piperidinoethylquinoline, and its salts, A., 499.
- 4- β -Piperidinoethylquinoline, and its derivatives, A., 500.
- γ -Piperidino-*n*-heptane, and its picrate, A., 736.
- 3- β -Piperidino- α -hydroxyethylidibenzfuran, and its hydrochloride, A., 986.
- 9- β -Piperidino- α -hydroxyethyl-1:2:3:4:5:6:7:8-octahydrophenanthrene, and its salts, A., 973.
- α -*N*-Piperidino- β -hydroxypropane, γ -amino-, A., 202.
- 9- β -Piperidino- α -hydroxy-*n*-propyl-1:2:3:4:5:6:7:8-octahydrophenanthrene, and its salts, A., 973.
- α -Piperidino- γ -methylaminobutane, and its aurichloride, A., 478.
- Piperidinomethylbenzodioxan, narcotic action of, and its derivatives, A., 245.
- Piperidinomethyl-3-benzodioxan, action of, on glycemia, A., 117.
- γ -Piperidino- α -methyl-*n*-propylmalonic acid, and its ethyl ester, A., 478.
- 8-Piperidinomethylquinoline, 5-nitro-, and its hydrobromide, A., 1506.
- Piperidumethylquinolines, and their picrates, A., 1251.
- 0-Piperidino-octanesulphonic acid, (P.), B., 1131.
- 0-Piperidino-octyl alcohol, and its sodium sulphate, (P.), B., 1131.
- ϵ -*N*-Piperidino- $\Delta^{\alpha\gamma}$ -pentadiene, γ -chloro-, A., 1480.
- ϵ -*N*-Piperidinopent- α -en- γ -inene, A., 1480.
- α -Piperidino- β -phenylbutane, and its hydrochloride, A., 71.
- (-)- β -Piperidino- α -phenylpropane, A., 1230.
- 9- α -Piperidinopropionyl-1:2:3:4:5:6:7:8-octahydrophenanthrene, and its salts, A., 973.
- α -3-Piperidyl-8,8-dimethylpentane, and its hydrochloride, A., 499.
- α -3-Piperidyl-8,8-dimethylpentanol, and its hydrochloride, A., 499.
- 2-Piperidylmethylbenzodioxan, adrenolytic action of, A., 245.
- α -3-Piperidyl- ϵ -methylhexanone, A., 499.
- β -2-Piperidyl-*n*-pentan- β -ol, and its derivatives, A., 988.
- 3-2'-Piperidylpyridine, amino-. See Anabasine, α -amino-.
- Piperonal, reactivity and Raman spectrum of, A., 1446.
- ozonisation of, A., 1328.
- condensation of, with barbituric acid, A., 759.
- with *o*-phenylenediamine, A., 358.
- m*-nitrobenzhydrazide, A., 743.
- N*-nitroguanylimine, A., 769.
- phenylhydrazono-*p*-sulphonic acid hydrate, A., 491.
- o*-Piperonal derivatives, A., 860.
- 1-Piperonylhydrocotarnine, 5-bromo-1-6'-nitro-, and its hydrobromide, A., 1513.
- 1-Piperonyl-5- α -hydroxy-6'-nitro-3'-4'-methylenedioxybenzylhydrocotarnine, 1-6'-nitro-, and its hydrobromide, A., 1513.
- cis*-Piperonylacetaldehyde, α -mono- and $\alpha\beta$ -di-bromo-, and their oximes, A., 747.
- Piperonylaminomethylanthydrocotarnine, and its dihydrochloride, A., 767.
- 6- β -Piperonylethylaminomethylhomopiperonylonitrile, A., 875.
- Piperonylidene-4-aminoantipyrine, A., 990.
- Piperonylideneaminomethylanthydrocotarnine, A., 767.
- Piperonylideneaminothiophenol, zinc salt, A., 1386.
- Piperylene-2:6-dimethyl-1:4-naphthaquinone, A., 1372.
- Piperylenethymoquinone, A., 1372.
- Pipettes, automatic, A., 839.
- bulb, A., 1098.
- slow combustion, for gas analysis, A., 839.
- syringe, A., 599.
- Piqui-a fats, glycerides in, B., 559.
- Pisodonophis boro*, precipitating action of mucus of, A., 896.
- Pistacia lentiscus*, uses of, B., 365.
- Pistons, aluminium alloys for, (P.), B., 274.
- Pisum sativum*. See Peas.
- Pitch, treatment of, (P.), B., 260.
- refractory bricks for ovens for carbonisation of, B., 993.
- coking of, B., 789; (P.), B., 789.
- distillation of, (P.), B., 180.
- hydrogenation of, B., 391.
- melting of, (P.), B., 343.
- solidified, treatment of, B., 1029.
- production of aqueous emulsions of, (P.), B., 88, 860.
- production of fuels from, (P.), B., 393.
- removal of, from glass apparatus, B., 131.
- coal-tar, increasing fluidity of, (P.), B., 1083.
- granulated, production of, (P.), B., 440.
- pine, solidified, use of, B., 1055.
- Pitchblende. See Uraninite.
- Pithecolobium tobatum*. See Beans, djenkol.
- Pitmelanin, treatment of diabetes with, A., 1401.
- Pitocin, reduction of, with cysteine, A., 1275.
- effect of, on copper-reducing power of serum and urine, A., 1424.
- Pitressin, arrest-point of, in kidneys, A., 412.
- antidiuretic action of, A., 1423.
- reduction of, with cysteine, A., 1275.
- effect of, on liver-fat, A., 902.
- on copper-reducing power of serum and urine, A., 1424.
- Pituitary, A., 1547.
- adrenotropic substance in, A., 412.
- ascorbic acid in, A., 793.
- hormones of. See under Hormones.
- relation of, to lipin content of organs, A., 1397.
- separation of thyrotropic substance from, A., 902.
- distribution of vitamin-C in, A., 1264.
- changes in, in atrophy of testicles, A., 542.
- effect of X-ray irradiation of, on blood-magnesium and magnesium exchange, A., 543.
- effect of, and of internal secretions on reduced glutathione in blood, A., 543.
- on mineral composition of blood, A., 643.
- on chlorides in blood-serum, A., 540.
- on iodine metabolism, A., 258.
- relation of, to action of adrenaline and insulin, A., 901.
- anterior, relation of, to adrenal cortex, A., 789.
- adrenolotropic substance of, A., 1283.
- concentration of antidiuretic factor of, A., 1032.
- influence of, on glycogen metabolism, A., 411.
- relations of, with gonads, A., 1424.
- functional correlations between ovary and, A., 1284.
- thyrotropic action of, A., 1284.
- effects of, on thyroid and ovary, A., 1544.
- effect of iodine and thyroid on, in goitre and thyroidectomy, A., 1423.
- of guinea-pigs, oestrogenic gonadotropic substance of, A., 541.
- ox, alkaline extracts of, A., 1284.
- of female rats, effect of oestrin on, A., 1425.
- of female albino rats, effect of thyroid feeding on, A., 412.
- in castrated female rats, morphology of, and those injected with pregnancy urine, A., 412.
- of infantile female rats receiving pregnancy urine extracts, A., 412.
- of male rats, effect of anterior pituitary-like substances and of oestrin on, A., 1425.
- determination in, of reducing substance, A., 1145.
- of various animals, gonadotropic potency of, A., 1544.
- atrophied, effect of amniotin on, A., 791.
- of blue whale, hormones in, A., 1544.
- guinea-pig's, vasopressin content of, A., 1171.
- horse, gonad-stimulating activity of, of different age and sex, A., 1424.
- human, iodine content of, A., 377, 511.
- thyrotropic activity of, A., 1544.
- posterior, effect of preparations of, on water exchange in frogs, A., 790.

- Pituitary**, posterior, action of, on blood-lactic acid, A., 790.
 rabbit and rat, effect of pregnancy urine on ovary-stimulating power of, A., 1425.
 of frozen turkeys, gonadotropic action of, A., 1544.
- Pituitary extracts**, effects of, and of gonadotropic urine, A., 541.
 in castrates, A., 541.
 and of insulin on viscosity of blood, A., 259.
 on ketone content of blood, A., 541.
 on blood-lactic acid, A., 128.
 on serum-calcium, A., 412.
- anterior, effect of carbohydrate intake and thyro-parathyroidectomy on action of, A., 901.
 action of, on adrenals, A., 667.
 on blood-sugar, A., 1423, 1544.
 on ketone excretion in rats, A., 128.
 on sex glands, A., 667.
 masculinising action of, on castrated guinea-pigs, A., 667.
 thyrotropic action of, A., 667.
- posterior, diuretic effect of, in anaesthesia, A., 128.
 hyperglycæmic action of, A., 667.
 luteinising principle of, A., 1284.
 effect of, on blood formation, A., 902.
 on liver glycogen, A., 902.
 on stomach, A., 902.
 on water exchange in frogs, A., 668.
 and thyroxine, on water and sodium chloride in tissues, A., 543.
- Pituitrin**, effect of sera of pregnant and non-pregnant women on action of, A., 237.
 effect of, on copper-reducing power of serum and urine, A., 1424.
 on lactic acid, protein, and sugar in lymph and blood, A., 1261.
 on metabolism, A., 543.
 on water and chlorine excretion in pregnancy, A., 259.
 synergism between œstrin and, A., 259.
- Placenta**, immunity effects with extracts of, A., 1395.
 glycogen of, A., 1004.
 autolysis of glycogen in, A., 122.
 human, choline in, A., 233.
 water-soluble choline precursor in, A., 1265.
 urea production in, A., 1265.
- Plagioclase**, from Linosa, A., 323.
- Plaice**, digestion in, A., 404.
- Planaria dorotocephala**, antero-posterior disintegration in, A., 657.
- Planck's constant**, values of, A., 1443.
 determination of, by X-rays, A., 1298.
- Planets**, atmospheres of, A., 322, 1297.
 giant, atmospheres of, A., 143.
 major, spectra of, A., 800.
- Plankton**, production of, A., 1281.
 liberation of phosphate in sea-water by breakdown of, A., 1281.
 marine, iron in sea and, A., 1343.
 manganese in, A., 1281.
- Planographic printing plates**, compositions for treatment of, (P.), B., 751.
- Plant**, chemical, care and maintenance of, B., 1.
 materials for construction of, B., 433.
 non-metallic constructional materials for, B., 705.
 construction of buildings for, B., 881.
 use of aluminium in, B., 105.
 welded metals for, B., 634.
 use of silver in, for corrosion resistance, B., 153.
- Plant**, chemical, use of corrosion-resistant steel in, B., 458.
 German, special steels for, B., 1047.
 in the Technische Hochschule, Karlsruhe, B., 177.
- Plants**, composition of, in relation to their natural order, A., 420.
 influence of potassium fertilisers on, B., 116.
 histology of, grown in toxic concentrations of boron, A., 1042.
 chemical properties and evolutionary status of families of, A., 132.
 integration of behaviour of, A., 548.
 growth of, curve of, B., 282.
 electrophysiological theory of, A., 418.
 Mitscherlich's theory and Rippell's law of, B., 116.
 effect of adsorbents on, B., 918.
 under Mazda, neon, sodium, and mercury-vapour lamps, B., 867.
 stimulation of, B., 741.
 effect of stimulants on, A., 418.
 effect of boron compounds on, B., 967.
 influence of cations of chlorides and sulphates on, B., 867.
 effect of dyes on, A., 905.
 effects of ethylene, ethane, acetylene and carbon monoxide on, A., 1548.
 effect of fluorine on, B., 1109.
 effect of animal hormones on, A., 1548.
 effect of manganese on, B., 73.
 effect of atmospheric ozone on, A., 1548.
 influence of potassium on, B., 966, 967.
 effect of progynon on, B., 821.
 influence of soils on, B., 867.
 in highly acid soils, B., 867.
 on steppe soils, B., 244.
 effect of rarer elements in soils and fertilisers on, B., 1109.
 relationships between soils, nutrient ratios of manures, and, B., 1109.
 effect of vanadium on, B., 967.
 effect of vitamin-C on, A., 1036.
- growth and metabolism of, on mineral salt nutrition, A., 1039.
- growth substances in, A., 1039, 1351, 1548.
 identity of growth-promoting and root-forming substances in, A., 418.
 activation of cambial growth in, A., 418, 905.
 elongation and expansion of, in reduced light intensity, A., 264.
 emanations from, producing leaf epinasty, A., 1548.
 effect of ultra-violet light on growth and calcium and phosphorus contents of, A., 553.
 influence of exchangeable sodium on growth and assimilation of phosphoric acid by, B., 1109.
 cropping trials with, in cylinders, B., 199.
 hardness of, in relation to growth, organic nitrogen, and buffer capacity, A., 904.
 effect of air-flow on processes in, A., 1178.
 effect of light on processes in, A., 1178.
 effect of hormones on flower development in, A., 1039.
 reproductive cells of, A., 420.
 movement of solutes in stems of, A., 266.
 capillary distribution of constituents of, B., 573.
 relation between distribution of, and p_H of soil, A., 132.
 influence of soil liming on reaction of sap of, B., 690.
 influence of soil type on sensitiveness of, to chlorine, B., 73.
- Plants**, relationship of mineral contents of soils to, B., 422.
 mineral nutrition of, A., 670.
 effect of humic acid on absorption of mineral salts by, A., 265.
 nutrient intake of, B., 566.
 effect of light on, A., 549.
 from flowing and stationary solutions, A., 1037.
 intake of phosphoric acid by, B., 198.
 intake of calcium-bound phosphoric acid by, B., 867.
 potassium intake of, from nutrient solutions, B., 245.
 nutrient ratios for, B., 515.
 determination of nutrient requirement of, by juice analysis, B., 646.
 nutrition of, by copper sulphate, B., 116.
 effect of addition of magnesium to potassium salts for, B., 116.
 rôle of organic matter in, B., 37, 38, 116, 165, 471, 967.
 rôle of silicon in, B., 73, 565, 1010.
 response of, to nitrogen concentration in nutrient solutions, B., 38.
 nutrient value of sodium and potassium for, B., 966, 967.
 harmony of nutrients for, B., 689.
 efficiency of nutrients for, B., 918.
 influence of manganese on release of nutrients for, from soils, B., 967.
 deficiency experiments in water cultures of, A., 1289.
 effect of light on assimilation by, A., 1038.
 carbon dioxide assimilation in, A., 794, 1177.
 carbon dioxide balance in, at higher light intensities, A., 904.
 assimilability by, of citrate-soluble phosphoric acid, B., 820.
 of citrate-soluble phosphates, B., 372.
 of iron and aluminium phosphates and complex salts, B., 778.
 of meta- and pyro-phosphates, B., 966.
 of nitrates, A., 552.
 of potassium, and its distribution in soils, B., 1107.
 availability of potassium in feldspar to, B., 820.
 avitaminosis in, A., 132.
 effects of exploration on metabolism of, A., 1288.
 polar sorption of, in soils, B., 867.
 effect of soil drought on, B., 820.
 effect of blue-violet rays on photosynthesis in, A., 1547.
 respiration of, A., 670.
 effect of potassium on, A., 1178.
 effect of storage on respiration and enzyme activity of, A., 263.
 effect of phosphorus supply on transpiration in, A., 795.
 effect of œstrogenic hormones on, A., 1039.
 cell-wall constituents of, A., 421.
 formation and structure of cellulose membranes in, A., 1541.
 mineral constituents of, A., 422.
 return of minerals to soils by, B., 967.
 effect of manuring on alkalinity of ash of, B., 967.
 adsorbed aluminium, manganese, and ammonium, as fertilisers for, B., 967.
 physiology of action of ammonia on, B., 1110.
 effect of phosphorus and potassium on utilisation of ammonia- and nitrate-nitrogen by, B., 1157.
 anthocyanins in, in relation to assimilation, A., 548.

- Plants**, effect of boric acid in, A., 552.
 effects of boron deficiency on, B., 690.
 influence of micro-elements on distribution of calcium, magnesium, and phosphates in, A., 1179.
 drift of calcium and potassium in, with age, A., 265.
 carbohydrate metabolism of, B., 325.
 exchangeable cations in soils and, B., 967.
 fixing and staining of chromosomes of, A., 1182.
 colloids in, A., 165.
 colouring matters of, A., 340.
 accumulation of electrolytes in, A., 266, 552, 1431.
 enzymic activity in relation to variety of, A., 658.
 effect of length of day on activity of oxidising enzymes in, A., 1038.
 proteolytic enzymes in, A., 122.
 absorption of germanium by, A., 552.
 interconvertibility of glucose and fructose in, A., 549.
 interconversion of hexoses in, A., 420.
 insulin-like substances in, A., 1549.
 magnesium requirement of, B., 967.
 manganese in, A., 266.
 relation of soils to manganese deficiency in, A., 266.
 nitrogen in, B., 919.
 nitrogen absorption by, in aëration, A., 795.
 influence of carbon : nitrogen ratio on, B., 38.
 availability of nitrogen and phosphorus to, B., 515.
 utilisation of organic compounds by, B., 199.
 removal of oxygen from water by cut branches of, A., 549.
 inorganic phosphates in, and phosphate availability, B., 741.
 phosphatides in, A., 421, 1434.
 proteins, phosphorus of, A., 268.
 action of animal proteolytic enzymes on, A., 252.
 regulation of protein metabolism in, A., 420.
 activation of proteinases in, A., 122.
 formation of resins and rubber in, A., 796.
 fixation of radium in soils by, B., 73.
 secretions in, A., 1172.
 absorption of selenium from soils by, B., 688, 917.
 action of sodium chlorate on, B., 821.
 production of sterols by, A., 1041.
 sulphur content of, A., 1551.
 sulphur metabolism of, A., 553.
 fat-soluble vitamins and anti-oxidants in, A., 130.
 influence of, on pH of media, A., 132.
 effect of illuminating gas on, B., 515.
 influence of heavy water on, A., 795.
 extraction of active principles of, by ultra-filtration, B., 477.
 conversion of, into fossil coal, B., 1122.
 biological treatment of residues of, B., 690.
 propagation of *Azotobacter* and accumulation of nitrogen in decomposition of residues of, B., 690.
 disinfectants for, (P.), B., 518.
 toxicity of organic acids to, A., 674.
 toxicity of normal aliphatic alcohols to, B., 326.
 toxicity of sulphur dioxide to, B., 200.
 prevention of browning of tissues and juices of, with thiocarbamide, B., 647.
- Plants**, relation of sugar content and odour of, to susceptibility to attack by Japanese beetles, A., 797.
 disease-resistance of, B., 73, 1181.
 disease of, in relation to soil nutrient deficiencies, B., 167.
 agents for combating, (P.), B., 969.
 physiology of virus diseases in, B., 691.
 cardiac poisons from, A., 396.
 with cardiac action, A., 1019.
 pharmaceutical evaluation of, B., 877.
 destruction of organic matter in analysis of, A., 1044.
 detection in, of aluminium, and its distribution, A., 1044.
 determination of carbon dioxide assimilated by, A., 549.
 determination in, of aluminium, A., 186.
 of soluble ash, A., 552.
 of carbohydrates, A., 673.
 of chlorides, A., 52, 1551.
 of molybdenum, A., 1179.
 of potassium, B., 514.
- Plants**, aquatic, composition of, A., 265.
 Brazilian medicinal, caffeine in, B., 1163.
 cryptogamic, vesicular, sterols of, A., 1180.
 cultivated, composition of, A., 266.
 critical periods in mineral nutrition of, B., 821.
 effect of chromium on, A., 553.
 action of vanadium on, A., 553.
 control of rust on, (P.), B., 823.
 E. African, insecticidal properties of, B., 167.
 edible, fungicides and insecticides for, B., 74.
 etiolated, development of carotenoids and chlorophyll in, A., 263.
 fumaraceous, pharmacology of alkaloids of, A., 1410.
 grafted, accumulation of boron in, A., 1548.
 green, effect of ionised air on respiration of, A., 131.
 development of, in air enriched by carbon dioxide, A., 131.
 assimilation in, A., 1547.
 necessity of oxygen for, A., 1288.
 absorption of iron and chlorosis in, A., 1289.
 green fodder, coliform bacteria on, A., 536.
 hardy, insecticides for, B., 327.
 higher, cytochrome in, A., 1040.
 absorption of nitrate- and ammonia-nitrogen by, B., 325.
 esterification of phosphate in breakdown of sugar in, A., 904.
 relation of, to micro-organisms, A., 406.
 Indian, ascorbic acid in, A., 1036.
 Indian medicinal, A., 132, 796.
 indigenous, growth substances in, A., 1038.
 leguminous, root nodule bacteria of, A., 787.
 amino-acids from root nodules of, A., 1551.
 nitrogenous excretion from root nodules of, A., 420.
 carbohydrate supply in legume symbiosis in, A., 549.
 fungi of blight diseases of, A., 269.
 parasitic, B., 248.
 Philippine, storage solutions for, B., 472.
 poisonous, of Southern Rhodesia, A., 1436.
 seedling, metabolism in, under geotropic stimulation, A., 264.
- Plants**, seedling, formaldehyde treatment for control of damping-off of, B., 567.
 toxicity of aluminium to, A., 797.
 dicotyledonous, chemotropic sensitivity of, A., 266.
 Ukrainian, products from, B., 933.
 wild, of Lower Volga, oil content of, B., 814.
 woody, translocation and growth balance in, A., 794.
- Plant ash**, influence of manuring on alkalinity of, B., 422.
 determination in, of calcium, spectrographically, A., 1179.
- Plant cells**, proliferation of, A., 672.
 bursting of, by polarised sunlight, A., 132.
 effect of β - and γ -rays from potassium and radium on growth of, A., 797.
 summation of potential in, A., 1288.
 formation of membranes of, A., 672.
 nature of walls of, A., 1179.
 analysis of carbohydrates of walls of, A., 1042.
 absorption of ions by, A., 1037.
 osmosis in, A., 904, 1547.
 penetration into, A., 1179.
 permeability of, A., 419.
 in relation to calcium and sodium ions, A., 265.
 to electrolytic ions, A., 671.
 effect of cations on, to water, A., 797.
 effect of zinc salts on oxidation in, A., 1431.
 staining of, by dyes, A., 1043.
 reagent for, A., 1044.
 large, electrical behaviour of, A., 265.
 osmotic pressure and permeability of, A., 265.
 living, intake of fluorescent substances by, A., 1043.
 detection in, of proteins, A., 905.
- Plant extracts**, cadmium and zinc as stimulators of oxidation in, A., 1038.
 effect of, on blood sugar, A., 1157.
 Indian, therapeutic properties of, A., 1157.
 determination in, of amino-nitrogen, A., 906.
- Plant juices**, electrolytic acidification of, (P.), B., 970.
 effect of liming on reaction of, A., 552.
 ascorbic acid in, A., 1287.
- Plant leaves**. See under Leaves.
- Plant materials**, mill for grinding, A., 554.
 utilisation of inorganic nitrogen in decomposition of, B., 282.
 anaërobic decomposition of, A., 537, 664, 787; B., 746.
 green, extraction of juices from, B., 199.
- Plant organs**, parallelotropic, action of growth substances in, A., 1039.
- Plant products**, separation of, by electrolysis, A., 1349.
 determination in, of lignin and cellulose, B., 398.
- Plant protoplasts**, drawing of, into threads, A., 419.
- Plant roots**. See under Roots.
- Plant scale**, red, control of, by spray-fumigation, on lemons, B., 375.
 fumigation for, B., 246.
 hydrocyanic acid fumigation for, B., 327.
 California, control of, by fumigation, B., 327.
- Plant smoke**, hæmolysis by, A., 881.
- Plant tissues**, extraction of sap from, A., 674.
 permeability of, to water, A., 671.
 regulation of media by, A., 671.

Plant tissues, epinasty in, due to production of ethylene, A., 1179.
 preparation of aqueous extracts of soluble nitrogen from, A., 269.
 vitamin-C in, A., 1176.
 polar, relation between oxidation and output of electrical energy by, A., 904.
 analyses of, A., 1435.
 determination in, of ammonia- and amide-nitrogen, A., 906.
 determination in, of carotene, colorimetrically, A., 1434.

Plant tumours, effect of oestrous hormones on, A., 1431.

Plant viruses, production of primary lesions by, A., 1043.
 serum reaction in study of, A., 270.
 action of methylene-blue on, A., 269.
Plantago ovata, seeds of, A., 1180.
Plantago psyllium, mucilage from, A., 797.
 treatment of seeds of, (P.), B., 924.

Plasma, proteins in, and in serum, A., 1393.
 solubility of, A., 879.
 utilisation of, in body metabolism, A., 1152.
 heparinised and oxalated, cholesterol in, A., 1261.
 phospholipin content of, A., 880.
 of lactating and pregnant women, lactose in, A., 1142.
 oxalate, coagulation of, by trypsin, A., 771.

Plasmiodiophora brassicae, B., 919.
Plasmodium praeox, action of quinoline derivatives on gametocytes of, A., 395.

Plasmolysis, A., 671.

Plasmoquin, gametocidal action of, A., 895.
 synthesis of phenanthridine derivatives resembling, A., 1506.

Plaster, (P.), B., 548.
 production of, by treatment of hydrated lime with aluminium sulphate, B., 726.
 hardening of, (P.), B., 456.
 lacquers for, (P.), B., 367.
 influence of trass on, B., 24.
 mixtures of, for production of moulds, (P.), B., 727.
 building material containing, (P.), B., 24.
 acid-resistant, B., 308.
 acoustical, for high-humidity, (P.), B., 357.
 adhesive, skin lesions produced by, B., 1163.
 antiseptic isinglass, production of, (P.), B., 973.
 calcium sulphate, (P.), B., 62.
 gypsum, (P.), B., 1097.
 lime, (P.), B., 1097.
 lime-gypsum, production of, (P.), B., 548.
 wall, production of, (P.), B., 1097.
 insecticides for, (P.), B., 770.

Plaster board, manufacture of, (P.), B., 1045.

Plaster of Paris, properties of, B., 993.
 compositions from, (P.), B., 456.
 use of, in dentistry, B., 631.
 standards and tests for, B., 852.
 determination of initial and final sets of, B., 726.

Plastics, polymerisation in formation of, B., 466.
 production of, (P.), B., 110, 368.
 from sugar, B., 562.
 from ground wood pulp, B., 562.
 solvent recovery in, B., 1036.
 pigments for, (P.), B., 860.
 velocity distribution in, A., 579.
 manufacture of coloured extruded products of, (P.), B., 320.
 use of, in chemical works, B., 642.

Plastics, cellulose acetate, tempering of, (P.), B., 961.
 cellulose ester, colouring of, (P.), B., 467.
 "koroscal," properties and uses of, B., 735.
 laminated, B., 466.
 nitrocellulose, production of, (P.), B., 1154.
 organic polysulphide, compositions of synthetic resins and, (P.), B., 111.
 putty, B., 102.
 from rubber, B., 1055.
 synthetic, in the building industry, B., 1103.
 use of casein, cellulose, etc., in, B., 1151.

Plastic bodies, effect of viscosity variation on rupture of, B., 833.

Plastic compositions, (P.), B., 162, 737.
 manufacture of, (P.), B., 33.
 from organic sulphides, (P.), B., 321.
 from zein, (P.), B., 467.
 for manufacture of articles by extrusion, (P.), B., 853.
 acid-resistant, production of, (P.), B., 69.
 sulphide, production of, (P.), B., 368.

Plastic flow, study of, A., 1318.

Plastic masses, manufacture of, (P.), B., 279, 961.
 from aniline and formaldehyde, B., 734.
 from cellulose esters and ethers, (P.), B., 1056.
 from urea-formaldehyde resins, (P.), B., 69.
 apparatus for measuring deformability of, B., 49.
 manufacture of films, threads, and shaped articles from, (P.), B., 1154.
 containing rubber, manufacture of, (P.), B., 368.

Plastic materials, B., 257, 833.
 production of, (P.), B., 33, 775.
 from urea and formaldehyde, (P.), B., 111.
 apparatus for mixing and kneading of, (P.), B., 1075.
 liquid films in fine pores of, A., 294.
 influence of proximity of solid wall on consistency of, A., 1455.
 production of mother-of-pearl effects in, (P.), B., 511.
 apparatus for testing of, (P.), B., 788.
 oil- and solvent-resistant, production of, (P.), B., 775.
 thermo-setting, testing of, (P.), B., 961.

Plastic products, production of, from vegetable waste, (P.), B., 321.

Plasticisers, B., 1151.
 lacquer, influence of, on lacquer films, B., 1004.

Plasticity, correlation of structure and, B., 257.
 apparatus for measurement of, (P.), B., 1075.
 of disperse systems, A., 579, 820, 932, 1318.

Plastometers, hemisphere, determination of shear curves and absolute shear constants with, B., 1.

Plastometry of substances of high consistency, B., 1, 545.

Platinum atoms, asymmetric, A., 1132.
 isotopes of, A., 909, 1185.
 microstructure of, after action of helium, hydrogen, and oxygen in the electric discharge, A., 1060.
 electrolytic recovery of, from ores, etc., (P.), B., 107.
 and its alloys, strength and annealing of, B., 500.
 metallographic etching of, B., 412.

Platinum, *L*-series X-ray absorption spectrum of, A., 272.
L-series emission spectrum of, A., 1439.
L X-ray spectrum of, A., 676.
 radioactivity excited in, by neutrons, A., 426.
 anodic polarisation of, in sulphuric acid, A., 1079.
 effect of gases on photo-electric effect of, A., 12.
 ionisation of hydrogen over, A., 1068.
 influence of gas ions on electro-thermal effect for, A., 566.
 f.p. of, A., 21.
 adsorption by, of oxygen, A., 28.
 effect of gas absorption on, A., 139.
 adsorption of oxygen and catalysis of hydrogen peroxide by, A., 1068.
 sols, formation of, A., 1202.
 exchange of energy between gas molecules and, A., 8.
 catalysis of ortho-para conversion of hydrogen by, A., 1329.
 oxidation of, A., 1086.
 action of bromine on, A., 941.
 action of chlorine on, A., 711, 941.
 displacement of, by hydrogen, A., 824.
 decomposition of hydrogen peroxide by, A., 941.
 compound of, with helium, A., 1058.
 quadricovalent, planar configuration of, A., 684.
 tetravalent, configuration of, A., 1057.
 trivalent, A., 1487.

Platinum alloys with antimony or rhodium, A., 440.
 with chromium, ferromagnetism of, A., 573.
 with copper, electrical conductivity of, A., 923.
 with gold and silver, action of sulphuric acid on, A., 721.
 with iron, magnetic properties of, A., 1199.
 with thallium, structure of, A., 1455.

Platinum bases (*platinumamines*), A., 1471.

Platinum triammnesulphite, A., 461.
 Diamminodichloroplatosulphuric acid, A., 101.

Platidiammines containing methylamine, A., 1229.

Platodiammines containing methylamine, A., 1229.

Platinum oxide, action of heat on, chemically and electrically produced, A., 1058.
 reduction of, by carbon monoxide, A., 175.
 catalytic, preparation of, from spent material, A., 941.
 oxides, A., 462.
 phosphides, A., 926.

Platinic chloride, equilibrium of, with sodium chloride and water, A., 583, 1461.

Platinous compounds, reactions of, with phenoxtellurine dibisulphate, A., 100.

Platinum organic compounds with benzoin-oxime, A., 981.
 with mercaptans, varying valency of platinum in, A., 182.
 with thiosemicarbazide, A., 202.
 complex, A., 52, 1335.

Cyanoplatinates, fluorescence of solutions of, A., 147.

Platinum phthalocyanine, mol. wt. of, A., 689.

- Platinum detection and determination** :—
analysis of, B., 312.
errors in assay of, B., 595.
detection of, A., 53.
determination of, by electro-titration, A., 464.
microchemically, A., 56, 100.
- Platinum black**, A., 52.
X-ray study of recrystallisation of, A., 465.
- Platinum electrodes**. See under Electrodes.
- Platinum gauze**, influence of rhodium on resistance of, A., 941.
corrosion of, by ammonia-air mixtures, B., 1042.
- Platinum metals**, properties of, B., 500.
separation of, by hydrogen under pressure, A., 951.
assay of, A., 1096.
microscopical identification of, A., 1096.
determination of, in simple and complex salts, A., 1474.
- Platinum ores**, Russian, A., 190.
sulphide, A., 602.
- Platynecic acid**, and its salts, A., 764.
- Platyphylline**, and its salts, A., 764, 1387.
- Plectranthus fruticosus*, oil vesicles in corky tissue of, A., 671.
- Plectridium cellulolyticum*, fermentation of cellulose by, A., 125.
- Pleura**, visceral, in cats, gaseous interchanges through, A., 520.
- Pleurisy**, colloid-osmotic pressure of blood in, A., 517.
cholesterol content of, A., 1527.
- Pleuronectes platessa*. See Plaice.
- Plums**, control of sawfly on, B., 603.
- Plum juice**, fermented, first and last runnings of, B., 920.
- Plum trees**, bacterial canker on, B., 1013.
infection of, by *Fomes pomaceus*, A., 1432.
- Pluton**, Middle Bohemian, petrochemistry of, A., 1477.
- Ply-wood**. See under Wood.
- Pneumococcus*, immunising substances in, A., 1168.
oxygen respiration and hydrogen peroxide production by, A., 899.
micro-organisms decomposing carbohydrate of, A., 1420.
precipitation of, with calcium phosphate, A., 664.
specific precipitate of type II. A., 1420.
- Pneumogastric nerve**, sensitisation of acetylcholine by extracts of, A., 1157.
- Pneumonia**, cinchona alkaloids in, A., 636, 765, 996.
in guinea-pigs, action of diet-factors on, A., 1010.
lobar, urinary excretion of soluble polysaccharide in, A., 1402.
pneumococcal, in mice, chemo- and sero-therapy of, A., 1010.
- Pneumothorax**, physico-chemistry of blood in, A., 385.
- Poa bulbosa*, feeding value of, B., 971.
- Poa pratensis*. See Blue grass, Kentucky.
- Podophyllum peltatum*, active constituents of, A., 1157.
- Poi**, fermentation in manufacture of, B., 1017.
- Poikilotherms**, respiratory quotient in, A., 1391.
- Poirrier-blue**, as indicator in titration of alkaloid salts, A., 769.
- Porrier-blue C₂B**, as indicator for p_{H} , A., 947.
- Poisons**, effect of reaction of medium on action of, A., 654.
- Poisons**, experimental tolerance to, A., 656.
cardiac, vegetable, A., 342, 624.
cobra, enzymic activity of phosphatase of, A., 122.
curarising, effect of, on muscle fatigue, A., 245.
mussel, chemistry and toxicity of, A., 527.
natural and synthetic, action of, A., 657.
ophidian venom, blood changes caused by, A., 1158.
snake, action of, on surface films, A., 378.
detoxication of, by methylene-blue, A., 1394.
treatment of cancer with, A., 236, 515.
Australian, haemolysis by, A., 1143.
of *Lachesis*, A., 1394.
of tiger-snake and black tiger-snake, antigenic differences between, A., 883.
toad, A., 1502.
constitution of, A., 749.
products from, (P.), B., 174.
- Poisoning**, of animals by cyanides in industrial effluents, B., 1072.
of partridges by zeddo wheat, B., 1160.
of stock by plants, A., 657.
acetanilide, A., 779.
acetylsalicylic acid, A., 1412.
antimony, effect of cysteine on, A., 1276.
arsenic, synthesis of menthologlycuronic acid in, A., 1533.
arsenic and hydrocyanic acid, diagnosis of, A., 1413.
arsenic trihydride, A., 1022.
barbital, A., 118.
barbiturates, action of cocaine, alcohol, and dinitrophenol in, A., 1155.
barbituric acid, changes in blood in, A., 245.
barbituric acid derivatives, A., 656.
benzoic acid, production of glycine in, A., 395.
benzol and coal-tar hydrocarbons, B., 752.
bismuth, A., 398.
boron, in dogs, A., 1413.
carbon tetrachloride, nephritis in, A., 895.
acute, A., 1276.
carbon monoxide, chronic, A., 530.
carbon dioxide and coal gas, influence of moisture in, A., 1160.
cheese, B., 571.
chromium, A., 399.
coffee, formation of chlorogenic acid in, A., 117.
copper, in sheep, A., 657.
cyanide, A., 657.
control of, A., 247.
effect of glutathione in, A., 247.
in sheep, nitrite-thiosulphate as remedy for, A., 247.
in sheep and cattle, remedies for, A., 530.
cyanide, methaemoglobin, and methylene-blue, A., 1160.
dichlorodithyl sulphide, blood changes in, A., 398.
digitoxin, lanadigin, and ouabain, in dogs, A., 1275.
fluorine, A., 1022.
hydrocyanic acid, treatment of, A., 1534.
sodium tetrathionate as antidote to, A., 398, 1276.
hydrogen sulphide, sodium nitrite as antidote for, A., 398.
illuminating-gas, effect of methylene-blue in, A., 530.
industrial, detection of, from blood-serum examination, A., 120.
iodoacetic acid, A., 530.
lead, A., 657.
- Poisoning**, lead, changes in red blood-corpuscles in, A., 399.
content of lead in bones in, A., 399.
action of octin in, A., 399.
porphyrin excretion in, A., 531.
in calves, A., 1414.
manganese dioxide, poisoning by, A., 399.
mercury, effects of, A., 1160.
methyl chloride, A., 525.
occupational, in chemical industry, B., 832.
oxalic acid, effect of parathormone on, A., 127.
phosphorus, choline and liver-fat in, A., 1152.
influence of, on synthesis of menthologlycuronic acid, A., 1533.
in men, urine of, A., 1161.
sewage, B., 1168.
snake, alkaline reserve of blood in, A., 398.
sodium salicylate, influence of glucose on, A., 1533.
thallium, effect of potassium iodide on, A., 1533.
retrobulbar neuritis from, A., 1160.
thallium acetate, A., 1021.
uranium nitrate, effect of, on liver, A., 531.
- Polar effects**, transmission of, A., 702.
- Polarisation**, complex formation due to, A., 35.
of liquids, A., 917.
in dilute solutions, A., 694.
anodic, influence of anions on, A., 37.
cathodic, delayed ionic discharge as cause of, A., 707.
dielectric, A., 809.
molecular, and association, A., 24, 694, 1191.
new formula for, A., 916.
in solution, in relation to dielectric constant of solvent, A., 927.
of solutes at infinite dilution, A., 927.
optical, anisotropy of, in liquids, A., 148.
- Polariscopes**, high light intensity, A., 598.
- Polarity**, electronic theory of, A., 431.
of chemical compounds, A., 568.
- Polarographic tests**, micro-, A., 1097.
- Poles**, Australian wood for, B., 950.
wooden, sterilisation of, by oxy-acetylene scouring and charring, B., 950.
- Poliomyelitis**, nerve-cell destruction in, A., 888.
action of antiseptics on virus of, A., 257.
in monkeys, constituents of cerebrospinal fluid in, A., 236.
- Polishes**, manufacture of, (P.), B., 238, 1150.
powder, from alumina, (P.), B., 455.
shoe, production of, (P.), B., 734.
wax, (P.), B., 959.
for floors, B., 365.
- Pollak**, Alaska, unsaponifiable matter of liver oil of, B., 912.
- Pollen**, and its extracts, A., 549.
action of heavy water on germination of, A., 552.
inhibition of growth of, by cathode and X-rays, A., 788.
dried, storage of, A., 549.
germinating, effect of boric acid on, A., 552.
- Polonium**, ionisation curve of α -rays from, A., 275.
in rare gases, A., 141.
ionisation and scattering of α -rays from, A., 677.
tracks of α -rays from, A., 6.

- Polonium**, neutrons emitted by beryllium under bombardment by α -rays from, A., 276.
 β -rays from, A., 1440.
 scattering of α -particles from, by oxygen and neon, A., 1048.
 range of preparations of, A., 275.
 potential of, A., 169, 585.
 heat loss and radioactive constants of, A., 558.
 chemistry of, A., 1440.
 segregation of, in bismuth crystals, A., 1440.
 solutions, storage of, A., 1075.
 retention and excretion of, in the organism, A., 531.
- Polonium compounds**, bivalent, A., 593.
- Polonium determination** :—
 determination of, in radio-lead, A., 1095.
- Poly-acids**, A., 314.
- Polyacrylic acid**, quinine, nicotine, and methylene-blue salts of, (P.), B., 264.
- Polycrystalline materials**, magnetic structure of, A., 19.
- Polycyclic compounds**, parachors of, A., 15.
 related to sterols, synthesis of, A., 968.
- Polycythæmia** and suppressed growth from diet poor in salts, A., 392.
- Polydecamethylene oxide**, A., 1104.
- Polyenealdehydes**, optical absorption of, A., 1300.
- Polyenecarboxylic acids**, optical absorption of, A., 1300.
- Polygalacturonic acid**, methylglucosides of, from "pektolsäure" and "pektolactonsäure," A., 732.
- Polyglycol arsenites**, production of, (P.), B., 1130.
- Polyhalides**. See *polyHalides*.
- Polyhalite**, treatment of, (P.), B., 269.
 with calcium carbonate, (P.), B., 672.
 extraction of salts from, (P.), B., 452.
 countercurrent extraction of potassium and magnesium sulphates from, B., 946.
 production of potassium sulphate from, B., 589, 801.
- Polyhydroxy-compounds**. See *polyHydroxy-compounds*.
- Polyketocarboxylic acids**, of fatty acid series, synthesis of, A., 733.
- Polymerides**, A., 163, 1219.
 structure of, from electron diffraction, A., 1061.
 determination of, by electron diffraction, A., 687.
 electron diffraction by, A., 813, 1451.
 viscosity of, A., 163.
 viscosity of solutions of, A., 1074.
 stretching of, A., 1451.
 with filiform molecules, influence of sex-atomic rings on viscosity of, A., 1067.
 higher, properties of, in solution, A., 1318.
 organic, diffraction of electrons by, A., 1452.
- Polymerisation**, B., 466 : (P.), B., 881.
 mechanism of, A., 1206, 1497.
 kinetics of, A., 1080.
 and ring-formation, A., 844, 1104.
 of organic compounds, (P.), B., 195.
- Polymethine compounds**, production of, (P.), B., 894.
- Polymethylbenzenes**, A., 1114.
- Polymethylene halides**, action of sodium sulphide on, A., 757.
- Polymethylene formals**, A., 844.
- Polymorphism**, X-ray study of, A., 1449.
 rate of transformation in, A., 688, 918.
 grain changes in, A., 1194.
- Polymorphous substances**, crystallisation of, A., 151.
- Polyneuritis**, effect of insulin on liver-glycogen in, A., 1422.
 from *Bacillus bulgaricus* in diet, A., 903.
 in pigeons, A., 1175.
- Polynucleotidase**, A., 1529.
- Polynucleotides**, molecular structure of, A., 510.
- Polypeptidæmia** in disease, A., 1261.
- Polypeptides**, structure of, A., 152.
 manufacture of condensation products of chloroformic esters and, (P.), B., 487.
 containing ψ -leucine, action of crepsin and trypsin on, A., 1228.
 in urine, determination of tyrosine index of, A., 379.
 determination of, A., 102.
 colorimetrically, A., 1390.
- Polyphenyls**, manufacture of, (P.), B., 840.
- Polyphenyl ethers**, viscosity of, A., 745.
- Polypodium**, constituents of species of, A., 1550.
- Polyporus mylitta**, "blackfellow's bread" from, A., 1042.
- Polypropenylbenzene**, and its derivatives, constitution of, A., 740.
- Polypropylenesulphone**, derivatives of, A., 1349.
- Polysaccharides**, A., 201, 477, 1226, 1355 :
 B., 568, 964.
 synthesised by micro-organisms, A., 477.
 enzymic hydrolysis of, A., 1535.
 dilatometry of, A., 250.
 protein groups with affinity for, A., 1390.
 benzyl ethers of, A., 331.
 simplexes of, with lecithin, A., 1481.
- Polysaccharoclupeins**, A., 882.
- Polysaccharoproteins**, A., 882, 1004.
 sols of, A., 933.
- Polystictus retulinus**, constituents of, A., 1432.
- Polystyrenes**, A., 740.
 determination of mol. wt. of, A., 74.
 solvation, solubility, and viscosity of, A., 163.
 swelling of, A., 1229.
 sedimentation of, A., 162.
 manufacture of insulating flexible bands, threads, foils, etc., of, (P.), B., 111.
- Polystyrol**, electrical insulating materials from, (P.), B., 910.
- Polysulphides**. See *polySulphides*.
- Polysulphones**, A., 604.
- Polyterpenes**, A., 351, 617, 625, 741, 749, 1125.
- Polyterpenoids**, A., 351, 617, 625, 741, 749, 1125.
 synthesis of, A., 756.
- Polythionates**. See under Sulphur.
- "Polythiophans," formation of, A., 757.
- Polytoma caudatum*, nutrition of, A., 785.
- Polytomella agilis*, carbon and nitrogen nutrition of, A., 1166.
- Polytypy**, and syntaxy, A., 1453.
- Polyuronides**, decomposition of, by bacteria and fungi, A., 254.
- Polyvinyl alcohols**, condensation products of, with aldehydes, (P.), B., 467.
 manufacture of shaped articles from, (P.), B., 112.
- Polyvinyl compounds**, compositions from, (P.), B., 161.
 manufacture of films, threads, etc., from, (P.), B., 111.
 manufacture of threads, ribbons, tubes, etc., from, (P.), B., 588.
- Pomegranates**, alkaloids of, A., 673.
- Pomegranate seed oil**, acids of, A., 960.
- Pongamia pinnata*, composition and oil of, B., 1002.
- Poppies**, alkaloids in heads of, B., 828.
 toxicity of ripe capsules of, A., 1532.
- Populin**, structure of, A., 69.
- Porcelain**, electric insulators from, (P.), B., 1095.
 increasing electric insulation of, (P.), B., 316.
 manufacture of articles of, (P.), B., 1044.
 use of, in artificial teeth, B., 227.
 high-mullite, vitrification of, B., 804.
 high-tension, influence of fineness of grinding on properties of, B., 453.
 white, electric firing of, B., 1143.
- Porcelain bodies**, resistant to temperature changes, B., 803.
 diaphragms, electro-osmosis at, A., 1317.
- Pork**, preservation of, (P.), B., 876.
- Porosity**, determination of, by vacuum method, B., 433.
- Porous bodies**, rate of rise of aqueous solutions in, A., 29, 698.
- Porphyrexide**, redox potential of, A., 1252.
 magnetic behaviour of, A., 1453.
- Porphyrin e_1** , *isochloro-*, ester of, A., 1383.
- Porphyrins**, A., 362, 993.
 formation of, from pyrrole and aldehydes, A., 1510.
 in coal, A., 1347.
 in coal, petroleum, phosphorites, and rocks, A., 727.
 absorption spectra of, A., 1444.
 band spectra of, A., 10.
 optical absorption of, A., 428.
 fluorescence of, A., 633.
 properties of metal complexes of, A., 1384.
 photosynthesis of, by organisms, A., 406.
 excretion of, in hyperemesis gravidarum, A., 1269.
 high excretion of, in the new-born, A., 885.
 chlorophyll, synthesis of, A., 633.
 natural, A., 887.
 with unsaturated side-chains, A., 993.
 detection and determination of, in urine, A., 379.
 determination of, A., 769.
 spectrophotometrically, A., 1552.
 spectroscopically, A., 1007.
- Porphyridine**, constitution of, A., 223.
 redox potential of, A., 1252.
 magnetic behaviour of, A., 1453.
- Porphyria**, excretion of porphyrins in, A., 1400.
 uroporphyrin in urine in, A., 776.
- Porphyry** from Gulf of Bothnia, A., 841.
 of Colorado, hydrothermal alteration of, A., 1345.
- Port wine**. See under Wines.
- Positrons**, A., 139.
 origin of, A., 801.
 theory of, A., 1439.
 infinite distribution of electrons in, A., 278.
 polarisation effects in, A., 1047.
 Dirac's theory of, A., 139.
 production of, A., 139.
 in different elements, A., 803.
 by particle collisions, A., 677, 1294.
 emission of, from radioactive sources, A., 1439.
 from thorium-active deposits, A., 1294.
 by β -rays, A., 425.
 from γ -rays, A., 8.
 annihilation of, A., 8.
 annihilation radiation of, A., 279, 912.
 high-energy, annihilation of, A., 679.
 recombination of, with electrons, A., 139.
 energy spectra of, from radioactive substances, A., 1439.

Positrons, energy spectra of, relation of, to decay constant and energy of bombarding protons, A., 1439.
neutrons and, A., 276.
artificially excited, A., 139, 274, 425.
fast, annihilation of, by electrons in the *K*-shell, A., 8.

Potamobius leptodactylus. See Crayfish.

Potassamide, action of, on sulphur in liquid ammonia, A., 179.
introduction of amino-groups into alkaloïds by, A., 635, 764, 1136.

Potassium atoms, nuclear: magnetic moment of, A., 804.
atomic mass of, A., 1048.
isotopes of, A., 140, 909.
half-life of, A., 1185.
occurrence of, in Dutch soils, B., 965.
recovery of, from Georgia shale and Wyomingite, B., 627.
purification of, and preservation in a silvery state, A., 944.
spectrum of, A., 1, 2, 271, 555.
effect of methane hydrocarbons on, A., 1438.
K X-ray spectrum of, A., 1046.
radioactivity of, A., 275, 276, 558, 677, 802, 1185, 1440.
product of radioactive transformation of, A., 191.
photo-electric effect in ether sols of, A., 700.
energy of photo-electrons and thickness of films of, A., 4.
elastic electron scattering in, A., 139.
surface ionisation of, on molybdenum, A., 273.
Hall effect in, A., 572.
lattice constants, heat of sublimation, and compressibility of, A., 815.
vapour, anomalous dispersion in, A., 684.
highly-attenuated flames of iodine vapour and, A., 708.
highly-attenuated flames of mercuric chloride vapour and, A., 708.
electronegative character of, in biology, A., 120.
influence of, on plant growth, B., 966, 967.
effect of, on respiration of plants, A., 1178.
intake of, by seedlings, B., 245.
distribution of, in cells, A., 1017.
fixation of, by birds and fish, A., 1523.
biological absorption of, in relation to calcium concentration, A., 1409.
effect of, on resting and working metabolism, A., 779.
in muscle, A., 232.

Potassium alloys with mercury, thermodynamics of, A., 170.
with rubidium, A., 693.
with sodium, cleaning of, A., 312.
liquid, diffraction of X-rays by, in magnetic fields, A., 1306.
electron emission in reactions of, A., 1293.
magneto-resistance of, A., 566.

Potassium salts, structure of, A., 16.
influence of cations on crystal growth of, A., 919.
alkali losses after administration of, A., 115.
influence of effluents from factories for, on meadows, B., 1109.
determination in, of sodium, by uranyl acetate method, B., 627.

Potassium metaborate, properties of, A., 434.
pentaborate, manufacture of, (P.), B., 899.

Potassium borates, A., 824.
borofluoride, equilibrium of, with the perchlorate and water, A., 36.
bromide, electrolysis of mixed solutions of aluminium bromide and, in ethyl bromide, A., 942.
equilibria in systems containing water and, A., 583.
carbonate, production of fertilisers and, from sunflower stems, B., 801.
absorption of carbon dioxide by solutions of, A., 41.
determination of, in potash, B., 268.
chlorate, preparation of, A., 714.
analysis of, B., 990.
chloride, electrolysis of, B., 29.
junction potentials between solutions of sugars and, A., 1462.
conductivity of, in water containing deuterium oxide, A., 1078.
conductivity and density of mixtures of, with magnesium chloride, A., 927.
effect of electrolytes on heat of solution of, A., 935.
heat capacity of, A., 1063.
internal friction in fused mixtures of magnesium chloride and, A., 439.
diffusion of, in aqueous solution, A., 295.
vapour pressure of aqueous solutions of, A., 1203.
surface tension of solutions of, with sodium chloride, A., 1316.
solubility of calcium sulphate in saturated solutions of, A., 441.
equilibria of, with aluminium and sodium chlorides, A., 168.
with ammonium chloride and water, A., 303.
with barium chloride and sodium carbonate, A., 303.
with cupric chloride and water, A., 1323.
with glucose, A., 166.
with magnesium and sodium chlorides and water, A., 448.
with the sulphate and magnesium chloride and sulphate, A., 168.
with sodium borate and chloride, A., 36.
with sodium carbonate and chloride, A., 36.
double decomposition of barium nitrate and, A., 168.
accumulation of, in cell-models, A., 1523.

chloride and iodate, equilibria of, with the sodium salts, A., 448.

dichromate, action of hydrogen sulphide on, A., 1470.
standardisation of solutions of, A., 317.

fluoborate and *periodate*, equilibrium of, with water, A., 1323.

fluorotantalate, solubility of, in aqueous hydrogen fluoride, A., 928.

halides, diamagnetic susceptibilities of, A., 149.

hexachlorothallate *dihydrate*, crystal structure of, A., 1450.

hydroxide, equilibria of, with the nitrate, A., 447.

iodide, electrical conductivity of, in water-alcohol solutions, A., 169.
surface ionisation of, on tungsten, A., 1303.
b.-p. elevation of ethyl alcohol by, A., 1318.

equilibrium of, with antimony iodide and water, A., 303.
with bismuth iodide and water, A., 36.

Potassium iodide, action of, on insoluble compounds, A., 179.
on ozone, A., 945.
reactions of organic bases and, with metallic salts, A., 720.
effect of concentration of, on decay of uranine fluorescence, A., 915.
compounds from dehydration of compound of lead iodide and, A., 460.
effect of, and of di-iodotyrosine on basal metabolism, A., 781.

permanganate, manufacture of, B., 543.
reaction of, with oxalic acid, A., 173, 1327.
precipitation of, with barium sulphate, A., 595.
staining of bacteria with, A., 257.
standardisation of, with calcium carbonate, A., 318.
with potassium ferrocyanide, A., 597.

nitrate, production of, from sodium nitrate, (P.), B., 452.
and ammonium sulphate, (P.), B., 899.
ultra-violet absorption spectrum of, A., 680.
photo-dissociation of, A., 682.
electrical conductivity of, A., 37.
oxygen overvoltage in electrolysis of mixtures of, with lithium and sodium nitrates, A., 1079.
solubility of, with aluminium, iron, and sodium nitrates, A., 928.
f.p. of aqueous solutions of lithium chloride and, A., 30.

nitrite, solubility curve of, A., 302.

oxide, systems of, with aluminium and calcium oxides, A., 448.

superoxide, transition of, A., 688.

oxides, A., 49.
phosphate, heats of solution and of dilution of, A., 705.

dihydrogen phosphate, electrical properties of, and their similarity to those of Rochelle salt, A., 1452.

platinichloride, action of glycine on, A., 1110.

di- and *tetra-silicates*, effect of carbon dioxide and potassium carbonate on formation of, A., 935.

stannochloride, volumetric determination of copper with, A., 186.

sulphate, manufacture of, (P.), B., 543.
from polyhalite, B., 589.
from polyhalite and sylvinit, B., 801.
extraction of magnesium sulphate and, from polyhalite, B., 946.
separation of, from schoenite solutions from salt lakes, B., 543.
electrical conductivity of, A., 37.
equilibrium of, with ammonium sulphate and water, A., 1461.
with calcium and magnesium sulphates, A., 1461.
with cerous sulphate and water, A., 36.

formation of hydrogen carbonates in mixtures of, with carbon dioxide, calcium carbonate and water, A., 944.

praseodymium sulphate, A., 180.

persulphate, production of, by electrolysis, B., 1042.
physical chemistry of, A., 1086.

dithionate, heats of formation and solution of, A., 1324.

trithionate, crystal structure of, A., 285.

Potassium organic compounds:—

- Potassium di-indyloamino-cobalt**, A., 1335.
ethoxydiphenylmethyl, and its oxidation, 345.
ethyl sulphate, gels, A., 297.
ferriocyanide and ferrocyanide, oxidation potential of mixtures of, A., 1462.
ferrocyanide, standardisation of permanganate solutions with, A., 597.
clarification of wines with, B., 41.
hydroxide, additive compound of, with sucrose, A., 964.
- Dipotassium tetrapyrrolo-iron**, A., 1335.
- Potassium detection and determination:—**
detection of, A., 1093.
with dipicrylamine, A., 1472.
with Gardinol W, A., 596.
histochemically, A., 134.
with phosphomolybdic acid, A., 185.
with zinc cobaltinitrite, A., 1337.
in mineral waters, spectrographically, A., 463.
determination of, A., 185; B., 514.
by cobaltinitrite method, A., 54, 317.
oxidation with ceric sulphate and potassium permanganate in, B., 1157.
colorimetrically, A., 1093.
histochemically, during evolution of hen's ovocytes, A., 1523.
with sodium cobaltinitrite, A., 1092.
spectrographically, A., 185.
volumetrically, A., 835, 836.
in blood-serum, volumetrically, A., 1519.
in body-fluids, A., 134.
in catalysts for ammonia synthesis, B., 225.
in fertilisers, B., 515.
in fertilisers and soils, B., 966.
in mixed fertilisers, B., 866.
in manures, plants, and soils, B., 514.
in milk, microchemically, B., 204, 825.
in oilfield water, B., 608.
in presence of sodium, gravimetrically, A., 1472.
in soils, B., 688.
by sedimentation, B., 740.
in arable soils, B., 373.
in sugar juice and molasses, B., 328.
- Potassium ions**, collision of, with gas particles, A., 5.
- Potassium ores**, of Carlsbad, New Mexico, concentration of, B., 627.
Solkamsk sulphate-free, origin of, A., 601.
- Potatoes**, effect of stall manures and potash fertilisers on yield and starch content of, B., 867.
shortening rest period of, B., 868.
effect of autoclaving on, B., 171.
effect of exposure to carbon dioxide on, A., 1177.
effect of virus on potential of, A., 554.
organic bases in, A., 269.
proteins of, A., 1040.
effect of farmyard manure on starch content of, B., 566.
destruction of adrenaline by oxidising enzymes of, A., 1535.
production of alcohol from, B., 823.
constituents of press juice from, A., 1181.
determination of imbibing power of meal, flour, etc., from, B., 824.
effect of halogenated aliphatic compounds on respiration of, A., 794.
changes in, during storage, B., 73.
effect of storage temperature on propagation of, A., 419.

- Potatoes**, rotting of, in storage, B., 514.
spraying of, with magnesium-Bordeaux mixtures, B., 516.
Bordeaux mixture for, B., 118.
sulphuric acid spraying of haulm of, to prevent late infection of tubers with blight, B., 689.
diseases of, A., 1042.
soil treatment for control of, B., 74.
soil treatment with sulphur and limestone for control of bacterial wilt of, B., 568.
eelworm disease in, in Devon and Cornwall soils, B., 472.
control of flea-beetle in, in Virginia, B., 327.
"iron-stain" disease of, A., 1043.
biology and control of nematode of, B., 118.
action of lime-copper sprays on *Phytophthora infestans* in, B., 168.
soft rot of, caused by *Pythium ultimum*, B., 647.
separation of a component of rugose mosaic of, B., 1012.
effect of manuring on scab on, B., 603.
effect of Nettolin, etc., on scab of, B., 869.
ensiled, manufacture of alcohol from, B., 474.
seed, effect of carbon dioxide on, in storage, B., 378.
fumigation of, with hydrocyanic acid, B., 647.
prevention of blight in, B., 691.
sweet, soils for, B., 918.
amylase of, A., 249.
phytosterol and phytosterolin from, A., 1041.
effect of potassium deficiency on, B., 117.
nutritive value of protein of, A., 1153.
vitamin-A in, B., 652.
wart-resistant and -susceptible, mineral matter in, A., 1043.
- Potato flakes**, manufacture of, B., 870.
acidity, pH, and colour of, B., 971.
determination in, of fibre, B., 1066.
of water, B., 204.
- Potato-leaf hoppers**, injury to forage legumes by, A., 269.
- Potato mash**, reducing time of fermentation of, B., 202.
- Potato plants**, influence of planting period on yield and seed value of, B., 166.
effect of inoculated sulphur, lime, and mercury compounds on yield of, B., 689.
green manuring of, B., 1011.
effect of excess potassium fertilisers on, B., 1011.
effect of controlled nitrogen supply on development of, A., 1178.
sensitivity of, to soil aeration, B., 646.
course of nutrient intake of, B., 566.
influence of period of potash manuring on nutrient intake of, B., 1060.
absorption of magnesium by, A., 553.
injury of, by fertilisers, B., 245.
sprays for, B., 246.
decane ring-spot of leaves of, B., 919.
virus causing foliar necrosis of, A., 269.
physiology of leaf-roll in, A., 554.
Irish, effect of fertilisers on, B., 422.
virus-infected, deamination in, A., 554.
- Potato starch**. See under Starch.
- Potential**, standards of, A., 1340.
effect of mechanical agitation on, A., 826.
surface tension and, A., 293.
of dielectrics at solution-air interface, A., 931.

- Potential**, at metallic electrodes in solutions containing foreign ions, A., 706.
critical, determination of, by alternating-current method, A., 1341.
depolarisation and reduction, determination of, A., 936.
diffusion, A., 936.
effect of concentration changes on, A., 1325.
electric streaming, in turbulent flow, A., 1321.
electrode, A., 37.
in non-aqueous solutions, A., 305.
theoretical evaluation of, A., 1325.
electrokinetic, A., 698.
adsorption theory of, A., 1316.
dependence of, on current density, A., 162.
electrolytic, theory of, A., 1205.
electrostatic, measurements of, with electron tubes, A., 1217.
Gibbs, A., 691.
of high-resistance cells, measurement of, A., 1097.
ionisation, calculation of, A., 1185.
normal acidity, A., 38, 450.
oxidation-reduction, A., 585.
of micro-organisms, A., 536.
in non-aqueous solutions, A., 38.
relation of, to velocity of reaction, A., 1207.
biological, A., 248.
thallous-thallic, A., 1326.
reduction, of organic compounds, A., 305, 706, 826, 1463.
single electrode, A., 169.
small, amplification and recording of, A., 189.
sparking, at low pressures, A., 138.
streaming, measurement of, with inert electrodes, A., 450.
using paraffin capillaries, A., 30.
striking, lowering of, at low pressures, A., 907.
thermo-, produced by magnetisation, A., 1063.
- ζ-Potential of surfaces**, A., 933.
- Potential barrier**, A., 1298.
- Potential dissociation effect**, A., 825.
- Potentiometers**, lamp, A., 320.
precision, A., 1341.
valve, A., 320.
- Pottery**, kilns for, (P.), B., 49.
manufacture of grooved articles of, (P.), B., 101.
frits, durability of, in service, B., 405.
See also Ceramics.
- Poultry**, changes in tissues of, from ingestion of sodium hydrogen carbonate, A., 1413.
effect of vitamin-E on fertility of, A., 794.
acid-base balance in fattening of, B., 477.
cold storage of, B., 77.
determination of naphthalene in lice powders for, B., 74.
- Powders**, apparatus for classifying of, by elutriation, (P.), B., 754.
separation of, (P.), B., 882.
apparatus for, (P.), B., 83.
reflexion of X-rays from, A., 16.
spraying of, (P.), B., 578.
determination of grain size of, B., 785.
determination of surface of, A., 930.
biological, sterilisation of, B., 323.
crystalline, reflexion of X-rays from, A., 1306.
highly dispersed, flotation of, A., 1071.
loose, motion of, in revolving bulbs, A., 467.
determination in, of moisture, B., 255.

- Power**, compositions for transmission of, (P.), B., 657.
- Pozzuolana**, determination in, of active silica, A., 317.
- Pozzuolanic materials**, production of, from residues in aluminium chloride manufacture, B., 547.
- Prairies**, northern, fertilisers for, B., 325.
- Prangos uloptera*, oil from, B., 333.
- Praseodymium alloys** with copper, A., 1456. with gold, A., 23. with lead and tin, A., 152.
- Praseodymium chloride**, density of aqueous solutions of, A., 1201. nitrate, solubility of, A., 1457. sulphate, double sulphates of alkali metals and, A., 180.
- Praseodymium determination** :— determination of, in rare-earth mixtures, A., 1338.
- Precipitates**, formation and properties of, A., 26. ageing of, A., 715. crystalline, depolarisation of light by, A., 1054. organic, potentiometric titration of, A., 639, 1339. rhythmic, A., 293. log sector method of analysis of, A., 315.
- Precipitation**, A., 1088. mechanism of, A., 317, 595. stimulation of, A., 1328. crystal, by salting out, A., 1140. electrical, of suspended particles from gases. See under Gases. periodic, A., 1202. modified, A., 823.
- Precipitin reactions**, effect of viscosity on, A., 771.
- Pregnancy**, diagnosis of, from urine, A., 237. diurnal changes in liver in, A., 108. posterior pituitary theory of toxicosis of, A., 237. thyroid action in, A., 1270. metabolism in, A., 1528. acid-base balance in cows and ewes in, A., 1270. equilibrium in blood and oedema in, A., 776. blood-cholesterol and fat and lipin contents of adrenal cortex in, A., 645. blood-proteins in, A., 518. calcium in, A., 518. calcium metabolism in, A., 1270. carbohydrate metabolism in, A., 518. specific dynamic action of carbohydrate, fat, and protein in, A., 888. copper in blood in, A., 643. endocrine relations during, A., 1402. intermediary fat metabolism in, A., 1270. glycogen in placenta in, A., 1004. histidine secretion in, A., 1011. hormones from toxæmias of, A., 1174. gonadotropic hormone in blood-serum and oestrin in urine during, A., 1426. iron metabolism in, A., 1270. lactose in plasma in, A., 1142. porphyrin excretion in, A., 385. serum in, A., 1269. serum-colloid osmotic pressure in, A., 1403. crystallisation of sodium chloride in sera of, A., 1149. serum-cholesterol in, A., 517. sugar in urine in, A., 650. effect of pituitrin on water and chlorine excretion in, A., 259. in mice, hormonal diagnosis of, A., 413. in rats, prolongation of, by injection of human pregnancy urine, A., 1425. in white rats, effects of 2:4-dinitrophenol on, A., 1412.
- Pregnancy in women**, salt metabolism in, A., 650. pseudo-, distribution of fats in corpus luteum in, A., 1011.
- Pregnanediol**, production of pregnanolones from, (P.), B., 878.
- Pregnan-3:20-diol**, hydrolysis of, and its derivatives, A., 215.
- alloPregnanediol*, isolation of, from urine of pregnancy, and its diacetate, A., 210, 341.
- alloPregnan-3:20-dione*, bromo-, and 2-hydroxy-, benzoate of, A., 1370.
- isoalloPregnanediol*, A., 1370.
- Pregnanolone**, and its semicarbazone, (P.), B., 878.
- Pregnanol-3-one**, formation of corpus luteum hormone from, and its derivatives, A., 216. bromo-derivative of, A., 346.
- alloPregnan-3-ol-20-one*, and its acetate, A., 216.
- isoalloPregnan-3-ol-20-one*, A., 1370.
- Pregnan-20-ol-3-one**, and its semicarbazone, A., 215. bromo-, acetate, A., 346.
- Δ¹-alloPregnen-3:20-dione*, A., 1370.
- Δ¹-Pregnen-20-ol-3-one*, and its acetate, A., 346.
- Preservatives** for animal and vegetable substances, (P.), B., 645. for fish nets, B., 1038. for foods and beverages, (P.), B., 173. for wood, laboratory test for, B., 994.
- Preserves**, determination of lead in, B., 921.
- Presses**, for removal of water, (P.), B., 610. laboratory heated, A., 599.
- Pressor substances**, from body-fluids of man, A., 894.
- Pressure**, apparatus for control of, (P.), B., 657. apparatus for production of small differences of, A., 58. use of McLeod gauzes for, with non-permanent gases, A., 1343. fall of, through dry packed towers, B., 177. cylindrical containers resistant to, B., 289. protection of vessels resistant to, by rupture discs, B., 609. high, A., 816. chemistry of, A., 455. determination of cross-section of balance of, A., 840. biological effects of, A., 510. high and low, psychromatic charts for, A., 599. hydraulic, fluids for, (P.), B., 338, 611, 1027. low, measurement of, A., 599. with the elastic manometer, A., 1099. vacuum gauge for, A., 1476.
- Pressure regulators**, A., 721.
- Pressure valve** for high vacua, A., 1098.
- Primetin**. See Flavone, 5:6-dihydroxy-.
- Primula acaulis*, 2-hydroxy-5-methoxy-acetophenone in rhizome extracts of, A., 1041. primulaveroside from, and its derivatives, A., 268.
- Primula obconica*, root rot of, B., 247.
- Primulaveroside**, A., 268.
- Printed matter**, coating of, with varnish, (P.), B., 511.
- Printing**, chemistry of, B., 913. application of electrodeposition in, B., 105. uses of organic solvents in, B., 800.
- Printing**, register of paper in, B., 223. with chromium mordant dyes, (P.), B., 1140. with diazoimino-compounds, (P.), B., 264, 349. with dyes, (P.), B., 627. with ester-salts of leuco-vat dyes, (P.), B., 542. with naphthol AS dyes, unevenness in, B., 989. of acetate artificial silk, (P.), B., 946. of animal fibres, (P.), B., 402. of animal and cellulose fibres with metallic dyes, (P.), B., 19. of cellulose fibres, (P.), B., 946. of cellulosic materials, (P.), B., 145. of coconut-fibre mats, B., 765. of fabrics, (P.), B., 542. with vat dyes, (P.), B., 303. of fibrous material with ice colours, (P.), B., 98. of half-tones on uncoated paper, B., 943. of leather, (P.), B., 1155. of paper with acid dyes, B., 143. on metal-coated paper, B., 943. of natural and artificial silk, with chrome mordant dyes, B., 449. of textiles, (P.), B., 626, 670, 1042, 1091. with leuco-esters of vat dyes, (P.), B., 224. vat and sulphur dyes for, (P.), B., 766. assistants for, (P.), B., 627. pastes for, (P.), B., 1042. of wool, B., 588. direct, on cotton piece goods with indigosols, B., 989. discharge, (P.), B., 946. of cellulose acetate materials, (P.), B., 98. intaglio, etching of cylinders for, (P.), B., 638. lithographic, (P.), B., 961. offset, aniline inks for, B., 366. resist-, of textiles, (P.), B., 225, 946.
- Pristane**, in fish oils, A., 1397.
- Procaine**, analogues of, A., 1508. diazotised, dyes from, A., 969. separation and detection of cocaine in mixtures with, B., 924.
- α- and β-Progesterones**, A., 1284.
- Progestin** in corpus luteum, A., 791. crystalline, isolation of, A., 1284. effect of, on uterine mobility, A., 1284.
- Progynon**, effect of, on blooming of hyacinths, A., 1431. on plant growth, B., 821. on red blood-corpuscles, A., 1034.
- Prolactin**, protein nature of, A., 542. effect of, on fowls, A., 1426. on ovary and sex accessories of fowls, A., 1426. on adrenals and sex glands, A., 790. on oestrous cycle, A., 1284. maternal behaviour produced in virgin rats by, A., 1426.
- Prolan**, stability of, A., 791. fate of, injected into rabbits, A., 542. disappearance of, from blood in nephrectomy, A., 1545. content of, in cerebrospinal fluid in hypertonia, A., 648. effect of, on respiration and fermentation of yeast, A., 542. on blood-cholesterol, A., 667. with pituitary synergist, on reproductive organs, A., 541. on testicles, A., 791. in urine of elderly men, A., 412. assay of, A., 128.

- Proline**, conversion of, into glutamic acid in kidneys, A., 1272.
 colour reactions of, A., 1255.
- L-Proline**, determination of, with rhod-anilic acid, A., 1140.
- Prontosil**, detection of, A., 1474.
- Propadrines**, ring-substituted, A., 972.
- Propaldehyde**, thermal decomposition of, A., 708.
 oxidation of, A., 308.
m-nitrobenzhydrazide, A., 743.
p-nitrobenzoylhydrazide, A., 1259.
o-tolylsemicarbazone, A., 1259.
- Propane**, production of, from petroleum in Germany, B., 132.
 physical constants of, A., 815.
 electric moment of, A., 567.
 thermal properties of, A., 22.
 total-heat curve for, A., 815.
 critical constants of, A., 437.
 thermodynamics of, in practice, B., 663.
 adsorption of, by active carbon, A., 696.
 viscosity of solutions of, in crystal oil, B., 888.
 rate of solution of, in liquid hydrocarbons, B., 218.
 chlorination of, A., 1082.
 oxidation of, A., 938.
 ozonisation of, A., 1103.
 pyrolysis of, in presence of water vapour, A., 1221.
 use of, as a fuel, B., 212.
- Propane**, *αγ*-diamino-, complex gold salts of, A., 1227.
tribromo- and *trichloro-α*-nitro-*β*-hydroxy-derivatives, and their acetyl derivatives, A., 1224.
ααββ-*tetrabromo-* and *αβ*-*dichloro-αα*-*δibromo-*, A., 958.
- cycloPropane**, rotational level of, A., 810.
 derivatives of, A., 81.
 absorption and elimination of, from the body, A., 525.
- cycloPropane rings**, ring-chain prototropy involving, A., 475.
- Propane-α-dichloroarsine**, *β*-chloro-, A., 333.
- L-Propane-αβ-diol**, A., 193.
- n-Propane-αα-disulphonic acid**, and its barium salt, phenyl ester, and derivatives, A., 472.
- n-Propaneseleninic acid**, and its salts, A., 959.
 molecular compounds of, A., 960.
- n-Propane-αα-sulphonamic acid**, barium salt and phenyl ester, A., 472.
- Propane sulphonic acid**, *γ*-amino-*β*-hydroxy-, and its *γ*-benzoyl derivative and its barium salt, and its choline derivative, A., 1111.
- Propane-α-sulphonic acid**, *β*-bromo-, sodium salt, A., 1350.
- n-Propane-ααβ-tricarboxylic acid**, *α*-bromo-, triethyl and trimethyl esters, and *β*-bromo-, and *β*-iodo-, methyl esters, A., 475.
- Propane-αβγ-tricarboxylic acid**, *α*-hydroxy-, from blackberries, A., 1352.
- cycloPropane-1:1:2-tricarboxylic acid**, methyl ester and triamide, A., 475.
- isoPropanols**, arsenated, A., 1389.
- Proparsamide**, action of, on tissue culture cells, A., 1161.
- Propene**. See Propylene.
- Propenylphenyl ethers**, syntheses with, A., 972.
 use of *ψ*-nitrosites of, in syntheses, A., 1362.
 rearrangement of *ψ*-nitrosites of, A., 971.
- Propeptan**, therapy with, A., 1160.
- L-Propiobetaine**, A., 331.
- Propiobetainic acid**. See *α*-Trimethylammoniopropionic acid.
- Propionic acid**, synthesis of, from carbonyl chloride and ethylene, A., 845.
 production of, by fermentation from agricultural by-products, B., 570.
 distribution of, between two liquid phases, A., 577.
 salts, electrolysis of mixtures of nitrates and, A., 472.
 calcium barium salt, crystal structure of, A., 571.
 amyl ester, use of, as lacquer solvent, B., 913.
tert.-butyl ester, A., 473.
 ethyl ester, reaction of, with magnesium isopropyl chloride, A., 845.
α-naphthyl ester, A., 484.
 disubstituted derivatives, and their nitrophenyl esters, optical rotation of, A., 14.
 determination of, A., 876.
 in acetic acid, B., 839.
- Propionic acid**, *d*-*β*-chloro-*α*-hydroxy-, A., 1110.
α-hydroxy-, acetyl derivative, pyrolysis of derivatives of, and its benzyl ester, A., 607.
α-iodo-, rotatory dispersion of, A., 1192.
βββ-*triiodo-*, A., 1482.
- Propion-*o*-toluidide**, *β*-chloro-, and *β*-iodo-, A., 1386.
- Propionylacetic acid**, oximino-, ethyl ester, A., 870.
- N-Propionyl-*β*-aminoethyl alcohol**, A., 995.
- Propionylcholine chloride**, (P.), B., 287.
- 5-Propionyl-2:4-dimethyl-3-ethylpyrrole**, A., 632.
- 4-Propionyl-*δ*phenyl**, and oximino-, A., 486.
- 2-Propionyl-3-methyl-4-ethylpyrrole**, and 5-bromo-, A., 632.
- 5-Propionyl-2-methyl-4-ethylpyrrole**, A., 631.
- 5-Propionyl-2-methyl-4-ethylpyrrole-3-carboxylic acid**, and its ethyl ester, A., 631.
- 5-Propionyl-1-methyl-4-isopropylbenzene**, 2-hydroxy-, A., 1369.
- 3-Propionyl-4-methylpyrrole-2:5-dicarboxylic acid**, and its dimethyl ester, A., 994.
- 2- and 4-Propionyl-*α*-naphthols**, A., 484.
- 9-Propionyl-1:2:3:4:5:6:7:8-octahydrophenanthrene**, 9-*α*-amino-, and its derivatives, A., 973.
- p-Propionylphenylcyclohexane**, and its derivatives, A., 215.
- 5-Propionylquinoline**. See 5-Quinolyl ethyl ketone.
- Propiophenone oxime** *p*-toluenesulphate, A., 345.
- Propiophenones**, *β*-chloro-, substituted, A., 766.
- o*-Propoxyaniline**, and its benzoyl derivative, A., 1364.
- Propoxybenzene**, *o*-iodo-, and *o*-nitro-, A., 1364.
- 2'-Propoxydiphenyl-6-carboxylic acids**, 2-nitro-, A., 1364.
- β*-*n*- and *iso*-Propoxyethyl *p*-amino- and -nitrobenzoates, A., 1494.
- 4-n-Propoxy-6:7-methylenedioxy-2-thion-3-phenyl-1:2:3:4-tetrahydroquinazoline**, A., 630.
- 10-Propoxyphæoporphyrin *a*₅**, A., 1383.
- p*-n-Propoxyphenylarsinic acid**, *p*-*β*-hydroxy-, and its salts, A., 1389.
- p*-n-Propoxyphenylarsin oxide**, *p*-*β*-hydroxy-, A., 1389.
- 10-Propoxyphyllerythrin**, A., 1383.
- 3-isoPropoxy-4-isopropylbenzoic acid**, *iso*-propyl ester, A., 1358.
- 6-Propoxypyridine**, 3-amino-, A., 498.
- n-Propyl alcohol**, production of, (P.), B., 138.
 adsorption of, by silica gel, A., 930.
 mixtures of, with isoamyl alcohol and water, A., 1457.
 equilibrium of, with propyl ether and water, A., 1349.
- isoPropyl alcohol**, production of, by *Clostridium butylicum*, B., 604.
 electric moment of, A., 567.
 solutions of, in benzene, water, and their mixtures, A., 438.
 condensation of, with toluene and its derivatives, A., 612, 739.
 water-tolerance of mixtures of gasoline with, B., 86.
 detection of, in ethyl alcohol with vanillin, B., 137.
- isoPropyl alcohol**, *αγ*-diamino-, production of, (P.), B., 1130.
- Propyl alcohols**, determination of, in mixtures with methyl and ethyl alcohols, B., 539.
- Propyl bromide**, anaesthetic action of, on sticklebacks, A., 1275.
tert.-butyl ether, *β*-hydroxy- and *βγ*-*di*-hydroxy-, manufacture of, (P.), B., 715.
γ-chloro-*β*-hydroxy-*n*-propyl and 2-hydroxy-1-cyclohexyl sulphides, A., 729.
 nitrite, decomposition of, A., 938.
 radicals, free, A., 1221.
- isoPropyl amyl**, *iso*amyl, butyl, *isobutyl*, ethyl, methyl, and propyl ethers, *ββ*-*δibromo-*, A., 471.
 carbonate, *α*-cyano-, A., 1223; (P.), B., 716.
 chlorosulphite, electric moment of, A., 1055.
- n*- and iso-Propyl bromides**, determination of, in tissues of anaesthetised animals, A., 1275.
- β*-Propyl tetrathio-orthosilicate**, A., 326.
- isoPropylacetone**, nitroso-, kinetics of depolymerisation of, A., 307.
- 9-n-Propylisoalloxazine**, 9-*γ*-hydroxy-, A., 631.
- 9-*β*-isoPropylisoalloxazine**, 9-*αγ*-*di*hydroxy-, A., 760.
- Propylamine**, thermal decomposition of, A., 307.
- 2-isoPropylamino-*p*-cresol**, production of, (P.), B., 940.
- m*-isoPropylaminophenol**, production of, (P.), B., 940.
- 2-n-Propylaminophenylstibinic acid**, 5-nitro-, A., 876.
- Propylaminothiomethanesulphonic acids**, potassium salts, A., 332.
- 5-Propylamino-*o*-xylene**, 4-nitro-*βγ*-*di*hydroxy-, A., 95.
- β*-isoPropylaniline**, *o*-nitro-*αγ*-*di*hydroxy-, A., 760.
- Propylanilines**, and nitro-, and their acetyl derivatives, A., 612.
- isoPropylaniline-*m*-sulphonic acid**, production of, (P.), B., 940.
- 10-Propylanthranol peroxide**, A., 1369.
- n-Propylarsinic acid**, determination of zincium with, A., 319.
- m*-isoPropylbenzaldehyde**, and its semicarbazone, A., 867.
- 5-n-Propyl-1:2-benzanthracene**, and its picate, A., 1117.
- 5-n-Propyl-1:2-benzanthraquinone**, A., 1117.
- 1-isoPropylbenzofuran-2-one**, 5-hydroxy-, A., 1371.

- o*-*n*-Propylbenzoic acid, *o*- γ -hydroxy-, and its lactone, A., 987.
n-Propylbenzonitrile, A., 612.
n-Propylbindone, and bromo- $\beta\gamma$ -dibromo-, and nitro-, A., 623.
Propylborneol, A., 625.
4-Propylisoborneol, A., 625.
tert-Propylbornyl alcohol, A., 625.
Propylisobornyl acetate, A., 625.
N-Propyl-*p*-bromobenzenesulphon-*p*-anisidides, A., 193.
n-Propyldibromogold, A., 480.
2-*a*-*n*-Propyl-*n*-butyldiphenyl-2'-carboxylic acid, 2-*a*-hydroxy-, and its lactone, A., 1496.
 α -Propyl- γ -butyrolactone, A., 474.
Propylcamphane, A., 625.
Propylcamphene, and its derivatives, A., 625.
 β -Propylcamphene, A., 625.
 α -Propylcamphenilone, and its semicarbazone, A., 625.
 β -Propylcamphenilone, and its semicarbazone, A., 625.
4-Propylcamphor, and its derivatives, A., 625.
Propylcamphoric acid. See 1:2:2-Trimethyl-3-propylcyclopentane-1:3-dicarboxylic acid.
Propylcarbamide, γ -hydroxy-, A., 1155.
 β -*n*-Propylcholine iodide, A., 193.
Propyldialkylamines, bromo-, quaternary ammonium salts from, A., 965.
3-Propyldibenzfuran, 3- γ -chloro- β -hydroxy-, A., 986.
4-Propyldihydroresorcinol, (P.), B., 606.
3-Propyldiisopropylidenglucose, A., 68.
Propylene, velocity of absorption of, by sulphuric acid, A., 1082.
solubility of, in various solvents, A., 1067.
polymerisation of, A., 1081.
catalytic polymerisation of, by phosphoric acid, B., 1035.
condensation of, with acids, in presence of boron fluoride, A., 195.
with aromatic hydrocarbons and with hydroxybenzoic acids, A., 1358.
reaction of, with sulphur dioxide, A., 1349.
chloride, preparation of glycerol trichlorohydrin from, A., 959.
determination of, B., 392.
in ethylene, B., 442.
Propylene glycol, preparation of, from propylene chloride, A., 325.
3:6-*endo*Propylene-4'-tetrahydrophthalic anhydride, adduct of, with phenyl azide, A., 349.
4 α -Propylene- $\alpha\beta$ -tricarboxylic acid, triethyl and trimethyl esters, A., 475.
4 β -Propylene- $\alpha\beta$ -tricarboxylic acid, silver salt and triethyl ester, A., 476.
methyl ester, reactions of, A., 475.
3-*iso*Propylfuran, and its mercurichloride, A., 866.
4-*iso*Propylfuran, 2-mercurichloride, A., 866.
4-*iso*Propyl-2-furfuraldehyde, 5-bromo-, A., 866.
5-*iso*Propyl-2-furfuraldehyde, and its semicarbazone, A., 867.
4-*iso*Propyl-2-furoic acid, 5-bromo-, and its ethyl ester, A., 866.
5-*iso*Propyl-2-furoyl chloride, A., 867.
4-*iso*Propylcyclohexan-1-one 2:4-dinitrophenylhydrazones, A., 482.
5-Propylhexyl- β -resorcylic acid, A., 1364.
4-*n*-Propyl-2-hydroxydiphenyl potassium sulphate, A., 1233.
1:2-*iso*Propylidene-3:4-anhydro-*d*-psicose, and its 5-acetate, 5-benzoate, and 5-*p*-toluenesulphonate, A., 735.
l-*iso*Propylidenescorbic acid, degradation of, A., 732.
*iso*Propylidenebis- γ -methyltetronic acid, A., 898.
Propylenecamphane, A., 625.
d-*iso*Propylenedioxy succinaldehyde, and its derivatives, A., 67.
d-*iso*Propylenedioxy succinic acid, diethyl ester, A., 1106.
1:2-*iso*Propylidene- α -fructose 3-*mono*- and tri-*p*-toluenesulphonates and 4:5-di-acetate and -benzoate 3-*p*-toluenesulphonates, A., 735.
*iso*Propylenegluco-*tri*bromoacetate and 1-iodoacetate, A., 1108.
dl-*iso*Propyleneglyceric acid, potassium salt and methyl ester, A., 732.
dl-*iso*Propyleneglycerol chloride, A., 732.
2:3-*iso*Propylenediosine-5-phosphoric acid, barium salt, A., 1482.
*iso*Propylenelactoflavin, A., 760.
*iso*Propylenemannitols, A., 194.
 $\gamma\delta$ -*iso*Propylenemannitol $\alpha\zeta$ -dibenzoate β -di-*p*-toluenesulphonate, A., 194.
2:3-*iso*Propylenemannuronide, potassium derivative, A., 732.
2:3-*iso*Propylenemethyl-6-deoxy-*d*-gulofuranoside, and its *p*-toluenesulphonate, A., 199.
2:3-*iso*Propylenemethyl-6-deoxy-*l*-talopyranoside, and its *p*-toluenesulphonate, A., 199.
2:3-*iso*Propylenemethylerythroside, A., 1354.
*iso*Propylidene- α -methylgalactoside acetate, A., 964.
*iso*Propylidene- α -methylglucoside, and its acetate, A., 964.
*iso*Propylenemethylhexosides, and their acetates, A., 329.
2:3-*iso*Propylenemethyl-1:5:6-mannofuranoside, A., 199.
*iso*Propyleneshikimamide, A., 1365.
*iso*Propyleneshikimic acid, and its methyl ester, A., 1365.
l-*iso*Propylenetartardialdehyde. See *d*-*iso*Propylenedioxy succinaldehyde.
l-*iso*Propylenethreonic acid, potassium salt and methyl ester and its derivatives, A., 732.
8-*iso*Propyl-7'-methylnaphtho-3''-2''-5:6-thioindoxyl, A., 1386.
n-Propyl-2-methylpyridinium chloride, γ -amino- β -hydroxy-, A., 1118.
2-Propyl- α -naphthol, A., 485.
N-Propyl-*o*-nitroaniline, *N*- γ -hydroxy-, A., 631.
9-*n*-Propyl-1:2:3:4:5:6:7:8-octahydrophenanthrene, 9- β -amino- α -hydroxy-, and its salts, A., 973.
Propylamine, reactivity and p_H of, A., 849.
2-Propylcyclopentanone-2-carboxylic acid, ethyl ester, A., 342.
9-*n*-Propylphenanthrene, and its picrate, A., 741.
4-*n*-Propylphenol, 2-chloro-, and its α -naphthoate, (P.), B., 974.
p-*iso*Propylphenylacetoneitrile, A., 1123.
 β -*p*-*iso*Propylphenylethylpyridinium bromide, β -hydroxy-, and its hydrate, A., 1131.
9-*p*-*n*-Propylphenylfluorenyl 9-peroxide, A., 1358.
p-*n*- and -*iso*-Propylphenyl styryl ketones, A., 1369.
N-Propylphthalimide, γ -chloro- β -hydroxy-, action of, on α -picoline and aniline, A., 1118.
N- γ -hydroxy-, A., 619.
l-*n*-Propylpiperazine salts, A., 629.
m-Propylpropionophenone, and its semicarbazone, A., 612.
p-Propylpropionophenone semicarbazone, A., 612.
Propylisopropylglyoxime, A., 1481.
*iso*Propylisopropylidenecyclopentanone, and its derivatives, A., 621.
3-Propyl-3-*iso*propylcyclopentanecarboxylamide, A., 625.
N-*iso*Propylpyridinium bromide, picrate of, A., 987.
2-Propylquinazoline, 4-hydroxy-2- α -bromo-, A., 1387.
3-*n*-Propylresacetophenone, A., 863.
2-*n*-Propylresorcinol, A., 863, 1233.
n-Propylsulphinic acid, ethyl ester, A., 1105.
1-Propyltetrahydronaphthalenes, A., 481.
2-*n*-Propyltetrahydropyran, A., 626.
3-*n*-Propylthiol-2-methylfuran-5-carboxylic acid, A., 497.
n-Propyl-*m*-toluidine, A., 1488.
n-Propyltolylcarbamides, A., 1488.
n-Propyl- γ -triazine, aminohydroxy-, and its picrate, A., 1254.
n-Propylvinylethynylcarbinol, manufacture of, (P.), B., 347.
5-*iso*Propyl-*m*-4-xenol, A., 614.
Prostate, effect of thyroxine on swelling of, A., 410.
experimental hyperplasia of, A., 791.
Protargol, differentiation of argyrol, collargol, electargol, and, in solution, B., 828.
Protease in wheat seeds, A., 1279.
Proteins, A., 268, 638.
mol. wt. of, A., 998.
determination of, by osmotic pressure measurements, A., 1458.
structure of, A., 268, 533.
X-ray study of, A., 162; B., 173.
chromosomes in relation to, A., 231.
monolayers of, A., 785.
allocation of free amino-groups in, A., 101.
groups in, with affinity for polysaccharides, A., 1390.
thiol and disulphide groups of, A., 506.
German crops for production of, B., 1157.
physical chemistry of, A., 878, 933.
infra-red absorption spectra of, A., 1053.
refractivity of, in solution, A., 638.
scattering of light in solutions of, A., 1302.
action of ultra-violet rays on, A., 369.
electrolytic character of, A., 300.
influence of dielectric constant of medium on surface potential and charge of, in liquids, A., 30.
electrokinetic properties of, A., 698.
effect of an electric current on cylinders of, A., 707.
isotonic point of, A., 822.
action of heat on, in solution, A., 1141.
pressure and water relations of, A., 164.
viscosity of solutions of, in relation to crystallisation, A., 1266.
adsorption of, at interface solid-liquid, A., 578.
speed of spreading of, A., 161.
osmotic pressure of solutions of, A., 879.
dialysis of solutions of, A., 369.
colloidal and constitutive changes of, A., 822, 823, 1460.
combination of coagulated particles of, with anions, A., 372.

Proteins, flocculation of solutions of, by alcohols, A., 164.
 "lipotropic" effect of, A., 890.
 application of Gibbs' equation to systems of, A., 300.
 X-ray study of denaturation and hydration of, A., 922.
 gelatinisation of, by acids, A., 300.
 polymerisation in aqueous solutions of, A., 164.
 influence of buffer mixtures on hydrolysis of, A., 897.
 effect of temperature on hydrolysis products of, A., 638.
 effect of hydrogen peroxide on precipitation of, A., 1266.
 action of iodoethyl alcohol on, A., 737.
 action of, with nucleic acid, A., 375.
 with starches, A., 165.
 sulphur in, A., 1140.
 toxicity of arsenic compounds of, A., 532.
 compounds of, with dextrin, A., 882.
 complex compound of bivalent manganese with, A., 1460.
 production of lacquer resins by benzylolation of, B., 1151.
 manufacture of resinous products from, (P.), B., 70.
 agent for removal of, A., 1044.
 calculation of maintenance requirement of, A., 1271.
 biological value of, A., 1014, 1153.
 mineral nutrition of test animals in determination of, A., 1531.
 nutrition with decomposition products of, A., 1272.
 relative nutritive values of, A., 112, 388.
 specific dynamic action of, in relation to calories and urinary nitrogen, A., 1152.
 value of carbohydrates and fats in utilisation of, A., 1015.
 effect of fat on utilisation of, A., 388.
 digestibility of, A., 1163.
 determination of, in fish meal, etc., B., 698.
 relative digestibility of, A., 533.
 liberation of ammonia in enzymic digestion of, A., 404.
 gastric digestion of, and of carbohydrates, A., 1407.
 tryptic-creptic digestion of, A., 404.
 influence of, on growth of ducks, A., 388.
 effect of diet deficient in, on nutrition of rats, A., 779.
 specific dynamic effect of, in diet of albino rats, A., 651.
 degradation products of, in blood, A., 103.
 distribution of, between corpuscles and plasma, A., 1393.
 passage of, through gastro-intestinal wall, A., 388.
 of serum and skin, effect of ultra-violet light on, A., 1276.
 adsorbed and dissolved, electric potential and charge of, A., 30.
 bacterial, production of, (P.), B., 46.
 in barley and malt, B., 779.
 Bence-Jones, composition of, A., 886.
 blood. See under Blood.
 cereal mixed, biological value of, A., 1405.
 complex, spreading of, A., 161.
 crystalline, A., 122.
 X-ray diffraction by, A., 687.
 denatured, ultra-violet absorption spectra of, A., 101.
 dietary, resorption of, A., 112.
 amino-acids in, A., 652.

Proteins, dietary, in relation to fat in liver, A., 523.
 flour, peptisation of, A., 165; B., 651.
 by organic acids, B., 651.
 salt-extractable, A., 1290.
 food, amino-acids in, A., 1014.
 meat. See under Meat.
 muscle. See under Muscle.
 plant. See under Plants.
 plasma. See under Plasma.
 rye flour. See under Rye flour.
 serum. See under Serum.
 in soya beans, B., 826.
 structured, swelling of, A., 1522.
 from sugar-beet pulps, B., 428.
 undigested, determination of, in mixed excreta of fowls, A., 380.
 urinary. See under Urine.
 and their derivatives, hydrochloric acid as reagent for, A., 1391.
 reaction of fibres of, with substantive dyes, B., 302.
 titration curves of fibres of, A., 826.
 standardisation of extracts of, A., 422.
 effect of, on indicators, A., 38.
 nephelometry of solutions of, A., 270.
 detection of, in plant cells, A., 905.
 in urine, A., 884.
 determination of, from acid-combining power, A., 1261.
 electrometrically, with metaphosphoric acid, A., 300.
 in brewing barley, B., 1112.
 in blood, A., 374.
 in flour mill products, B., 330.
 in milk, volumetrically, B., 171.
 determination in, of glycine, A., 370.
Proteinase, intracellular, A., 1279, 1538.
 muscle, A., 1537.
 pancreatic, A., 1417.
 tryptic, synthetic peptide as substrate for, A., 610.
 yeast, activation of, A., 660.
Proteolysis in regenerating tissues, A., 778.
Protium oxide. See Water.
Protoactinium, at. wt. of, A., 5.
 preparation of, A., 460, 593, 1214.
 extraction of, B., 590.
 M series spectrum of, A., 677.
 L-absorption constants of, A., 1440.
 precipitation of, with titanium, A., 945.
Protoanemonin, A., 1223.
Protocatechualdehyde β -D-glucoside, A., 965.
 glucoside and glucoside-galactoside, A., 1536.
 phenylhydrazone-p-sulphonic acid, and its salts, A., 491.
Protons, theory of, A., 1439.
 production of, by atomic disintegration, A., 1441.
 from hydrogen absorbed in palladium, A., 677.
 emission of, from targets bombarded by deutons, A., 142, 1296.
 in natural system of elements, A., 679.
 ratio of mass of, to that of the electron, A., 912.
 excitation and disintegration of, and the neutret, A., 1442.
 radiative capture of, by carbon, A., 1186.
 magnetic moment of, A., 144, 679.
 in relation to that of deutons, A., 560.
 relation between range and velocity of, A., 275.
 tracks of, in photographic emulsions, A., 910.
 stability of neutrons and, A., 278.
 collision of, with neutrons, A., 1440.

Protons, action of, with neutrons, A., 142, 911, 1049, 1297.
 slowing-down of neutrons by, A., 802.
 scattering of neutrons by, A., 678, 1440.
 scattering of, on protons, A., 802.
 γ -rays from lithium bombarded by, A., 1296.
 radiation from mutual annihilation of electrons and, A., 1294.
 resonance transmutations by, A., 1297.
 disintegration of elements by, A., 7, 142.
 disintegration of boron by, A., 1442.
 projected by neutrons, distribution-in-angle of, A., 1296.
 fast, passage of, through matter, A., 143.
 negative, A., 801.
 rapid, transmutation of light elements by, A., 1297.
Protophyson trimethyl ether, A., 490.
Protopine, and related alkaloids, A., 875.
Protoplasm, A., 422.
 viscosity of, A., 109.
 permeability of, to alcohols, A., 265.
 living, action of anaesthetics on, A., 394.
Protoporphyrin dimethyl ester, derivatives of, A., 871.
Prototropy, three-carbon ring-chain, A., 475.
Protozoa, metabolism of, A., 535.
 chemotherapy of, A., 535.
 in soils, A., 124.
 living, effect of ultra-violet light on, A., 124.
Pro-vitamin-D in food of whales, A., 1427.
Prunes, caffeic acid in, A., 1434.
 moisture in, B., 1020.
 vitamin-B₁ and -B₂ in, B., 921.
 treatment of, for packing, (P.), B., 876.
 effect of, on composition of urine, A., 391.
 d'Agén, Californian, carbohydrates in, B., 427.
Prune plants, sugar, phosphorus in, A., 553.
Prunus laurocerasus, infection of, with *Phyllosticta matthiolana*, A., 1436.
Prussian blue, absorption spectrum and constitution of, A., 806.
Pseudococcus citri, control of, B., 1013.
D-Psicose, formation of, from D-fructose, and its transition to D-sorbosc, A., 735.
L-Psicose, and its diacetone compound, A., 1109.
Psila rosea, control of, on carrots, B., 1012.
Psyche, composition of larval sacs of, A., 1144.
Psychoda alternata, habits and control of, B., 79.
Psyllium seed. See *Plantago psyllium*.
Pterocarpin, A., 1372.
 and its derivatives, A., 218.
Pterosantalol, A., 88.
Ptyalin, content of, in human saliva, A., 105.
Puccinia graminis tritici, germination of spores of, A., 269.
Puerperium, residual reducing substance in blood in, A., 109.
Pulegol, formation of, A., 624.
Pulegone, reduction of, A., 624.
Pulicaria salviaefolia, oil from, B., 333.
Pullorin, production of, (P.), B., 925.
 Pulp, manufacture of, (P.), B., 18, 351, 987, 1089.
 from Finnish peat, B., 489.
 high-pressure boilers for, B., 719.
 nickel alloys for, B., 446.
 effect on fish of wastes from, B., 928.
 and treatment of residual liquors, etc., (P.), B., 1089.
 recovery of, from printed paper, (P.), B., 846.

- Pulp**, recovery of organic constituents from black liquor from, (P.), B., 266.
treatment of, (P.), B., 266.
apparatus for washing and treatment of, (P.), B., 930.
agitators for, (P.), B., 658.
"Stock-Maker" laboratory beater for, B., 489.
beating characteristics of grass and wood fibres in, B., 16.
bleaching of. See under Bleaching.
chlorination of, (P.), B., 448.
cooking of, B., 587.
heat input into alkaline digesters for, B., 489.
digestion of, (P.), B., 721, 1139.
disintegration of, (P.), B., 786.
origin of cymene in sulphite boiling of, B., 16.
reflexion measurements on, B., 764.
apparatus for control of density of, (P.), B., 51.
behaviour of, in solutions of salts, B., 142.
evaluation of, by Kollergang beating method, B., 489.
German strength tests on, B., 587.
Green freeness tester for, B., 265.
permanganate- and Roe-Küng titrimetric chlorine-numbers of, B., 400.
determination of copper number of, B., 142.
determination of furfuraldehyde number of, B., 222.
brown, use of alder waste in production of, B., 446.
chemical, manufacture of, (P.), B., 96, 1041.
treatment of, (P.), B., 97.
unbleached, evaluation of, B., 1088.
determination in, of wood gum and pentosans, B., 719.
chemical and groundwood, effect of pH on freeness of, B., 845.
kraft, manufacture of, Tomlinson process for by-products from, B., 719.
distribution of sulphur in, B., 587.
and sodium acetate, from waste wood, B., 221.
cooking of, with improperly settled white liquor, B., 719.
mechanical, grinding of, B., 1088.
wood. See Wood pulp.
analyses of alcohol and resin extracts of, B., 184.
- Pulpwood**, density of, B., 986.
Pulses, non-protein nitrogen of, A., 672.
Pulverisation, (P.), B., 1074.
Pulverisation apparatus, (P.), B., 3, 882.
air classifiers for, B., 49.
Pulverisers, (P.), B., 531, 786.
air separators for, (P.), B., 50.
and separators, (P.), B., 531.
impact, (P.), B., 657.
- Pulvinic acid series**, lichen pigments of, A., 1238.
Pulvinic anhydride, and *o*- and *p*-hydroxy-, A., 1238.
Pumice stone, spongy, thermal conductivity of, B., 1096.
Pumps, for delivering liquids at constant rates, B., 82.
for water circulation, A., 189.
acid-resisting, (P.), B., 706.
centrifugal, (P.), B., 788.
diffusion, A., 600.
divergent-nozzle, speed of, A., 1342.
mercury, for mixing gases, A., 599.
mercury vapour, A., 1098.
characteristics of, A., 1342.
- Pumps**, oil diffusion, for evacuating X-ray tubes, A., 1340.
high-speed, A., 467, 840.
vacuum, check valve for, A., 1098.
water, safety apparatus for, A., 467.
water-jet, B., 82.
- Punica granatum***. See Pomegranates.
Punicic acid, A., 960.
Punkahs, (P.), B., 611.
Pupa oil, solid components of, A., 510.
Purgatives, water-soluble, from Bourdaine bark, A., 1041.
Purgative action, and chemical constitution, A., 79.
Purine, identification of pharmaceutical preparations of, with cobalt nitrate, B., 876.
derivatives, determination of, colorimetrically, A., 999.
Purines, derivatives of, from glyoxalines, A., 503.
in organs of ox, A., 1529.
of rabbit's liver, A., 1266.
determination of, in tissues, A., 1044.
Purine nucleosides, constitution of, A., 1509.
Purine series, rearrangement of allyl ethers of, A., 1309.
Purity, specific heat as criterion of, A., 924.
Purple, ancient. See Indigotin, 6:6'-di-bromo-.
- Purpura hæmorrhagica*** from gold and arsenic compounds, A., 1160.
Purpureagluco-sides, A., 330.
Putrescine flavianate, A., 639.
Putty, (P.), B., 162.
compositions for, (P.), B., 1045.
manufacture of plastics from, B., 102.
- Pyknometer**, micro-, A., 1342.
Pyocyanase, activity of, A., 126.
Pyocyaninium perchlorate, A., 1255.
Pyorrhea, acidophilic, A., 664.
alveolar, etiology of, A., 1409.
- Pyramidone**, synthesis of, A., 1132.
coloration of, by oxidising agents, B., 606.
compound of, with bismuth iodide, B., 123.
detoxification of, by sodium amytal, A., 1410.
toxicity of mixtures of, with veronal, A., 1532.
as cause of granulocytopenia, A., 1017.
reducing substance in urine after ingestion of, A., 1017.
inhibition of febrile liver hydration by, A., 656.
microchemistry of, A., 877.
colour reactions for, A., 999.
- Pyranthrone dyes**, vat, and their intermediates, manufacture of, (P.), B., 942.
Pyrrargyrite, crystal photo-effect with, A., 282.
- Pyrazoles**, acylation and alkylation of, A., 1380.
Pyrazole-3-carboxylic acid, methyl ester, A., 1380.
Pyrazoline-3:4-dicarboxylic acid, A., 994.
Pyrazolone derivatives, immuno-chemistry of, A., 105.
action of, on vascular system, A., 1411.
5-Pyrazolone derivatives, manufacture of, (P.), B., 974.
- Pyrene**, purification of, by chromatographic adsorption, A., 204.
derivatives, manufacture of, (P.), B., 796.
Pyrene, hydroxy-, manufacture of, (P.), B., 796.
- Pyrenesulphonic acids**, amino-, manufacture of, (P.), B., 985.
Pyrenium compounds, A., 220.
 γ -Pyrenylmethylpropionic acid, A., 968.
 γ -1-Pyrenylmethylbutyric acid, A., 968.
Pyrethrins I and II, toxicity of, A., 1157.
Pyrethrin II, isolation of, A., 1550.
determination of, B., 1068.
Pyrethrum, effect of environment on, B., 167.
treatment of, to increase stability, B., 517.
flowers, constituents of, A., 1550; B., 1068.
Australian-grown, B., 1061.
analysis of, B., 1023.
- Pyrethrum dust**, production of, (P.), B., 74.
loss of activity of, B., 39.
Pyrethrum extracts, analysis of products from, B., 332.
concentrated, effect of antioxidants on, B., 1117.
sprayed petroleum, control of ectoparasites by, A., 1411.
- Pyridine**, A., 498.
Hantzsch's synthesis of, A., 989.
and its derivatives, purification and hydrogenation of, (P.), B., 841.
ultra-violet absorption spectrum of, A., 427, 563.
photochemistry of, A., 990.
yellow coloration of mixtures of fructose and, by ultra-violet light, A., 1130.
conductivities of acids and other solutes in, A., 1462.
b.p. of mixtures of, with acetic acid, A., 1067.
equilibrium of, with acetic acid, A., 167, 291.
hydrogenation of, and its derivatives, A., 92.
free energy change in, to piperidine, A., 1462.
in presence of nickel, A., 757.
effect of unipolar substituents on action of, with benzyl bromide, A., 710.
fission of, by benzoyl chloride, A., 222.
reaction of, with ethyl iodide, A., 1082.
with Cleve's and Gerard's salts, A., 506.
- compounds, manufacture of, (P.), B., 585.
with antimony compounds, A., 368.
additive compounds of, with *N*-bromobenzamide and *N*-bromo- and *N*-chloro-phthalimide, A., 355.
with cobalt halides, A., 182.
with copper, influence of temperature on formation of, A., 1469.
complex compounds of, with cadmium chlorides, A., 222.
derivatives, electric moments of, A., 568.
biochemistry and therapy of, A., 1156.
with barbituric acid, synthesis of, A., 1504.
phosphorus derivatives of, A., 368.
synthesis of 2:2'-dipyridyl from ferric chloride and, A., 759.
and its homologues, toxicity of, A., 1156.
determination of, in very dilute solution, A., 68.
in presence of ammonia, A., 1390.
in presence of ammonia and nicotine, A., 877.
in nicotine, A., 1516.
- Pyridine**, 2-amino-, condensation of, with aliphatic oxides, A., 627, 757.
reaction of, with phthalic anhydride and with salicyloyl chloride, A., 92.
derivatives of, A., 758.
3-amino-, A., 1504.

- Pyridine**, 3-amino-, and its derivatives, and 6-bromo-3-amino- and -3-nitro-, A., 498.
 2,6-diamino-, production of, (P.), B., 829.
 3,4-diamino-, and its hydrochloride, 5-bromo- and 6-chloro-3,4-diamino-, 5-bromo-3-nitro-4-amino-, and 2-chloro-3-bromo-5-nitro-, A., 993.
 3-nitro-4-chloro-, A., 97.
Pyridines, arylated, A., 1505.
Pyridine bases, condensation products of, with benzaldehyde, A., 989.
Pyridine series, syntheses in, A., 1250.
 acids of, A., 1131.
 condensation of α -carboxylic esters of, A., 988.
Pyridine-2-carboxylic acid, ferrous salt, magnetic susceptibility of, A., 149.
 methylbetaine sulphate, A., 1250.
Pyridine-3-carboxylic acid, butyl ester, A., 92.
Pyridinecarboxylic acids, methylation of, A., 1250.
Pyridine-2,6-dicarboxylic acid, diethyl ester, A., 987.
Pyridine-2,3-dicarboxylic acid, 5-bromo-, and its anhydride, A., 1504.
Pyridine-hæmochromogen, absorption of carbon monoxide by, A., 1517.
Pyridinium dipyridinoiriditetrabromide, A., 868.
 ferro-bromide and -chloride, A., 356.
Pyridiniummethanols, syntheses of, A., 1131.
Pyridinobromogold, A., 459.
Pyridinotriazoles, *N*-substituted, synthesis of, by Graebe-Ullmann method, A., 226.
 3,4-Pyridino-7:8:9-triazole, and 5-bromo-, and their potassium salts and hydrochlorides, and 6-chloro-, A., 993.
Pyridodibenzfuran, bromo-, A., 986.
 γ -Pyridones, reactivity of carbonyl group in, A., 1378.
 2-Pyridone-5-stibinic acid, A., 1156.
Pyridyl-2-acetic acid, A., 988.
 3-Pyridylacetylene, A., 1131.
 4-3'-Pyridyl-3-acetyl-2-methylpyrrole, and its salts, A., 1381.
 4-3'-Pyridyl-3-acetyl-2-methylpyrrole-5-carboxylic acid, and its ethyl ester, and derivatives, A., 1381.
 2-Pyridyl γ -aminopropyl ketone, and its salts and derivatives, A., 988.
 4-2'-Pyridylaminopyridine, 3-amino-, and 3-nitro-, A., 226.
 α -2-Pyridylbutyramide, A., 1505.
 α -2-Pyridylbutyric acid, ethyl ester, A., 1504.
 γ -2-Pyridylbutyrolactone, and its salts, A., 988.
Pyridyl-2,6-diacetic acid, A., 988.
 5-2'-Pyridyl-2,3-dimethylpyrrole-4-carboxylic acid, ethyl ester, and its pierate, A., 1253.
 5-2'-Pyridyl-5-ethylbarbituric acid, 5'-nitro-, manufacture of, (P.), B., 524.
 5-4'-Pyridyl-5-ethylbarbituric acid, manufacture of, (P.), B., 524.
 α -3-Pyridylethylene, α -chloro-, and its hydrochloride, A., 1131.
 2-Pyridylethylmalonic acid, and its diethyl ester, A., 1504.
 γ -Pyridyl- β -hydroxypropanesulphonbetaine, A., 1111.
 2-Pyridyl γ -hydroxypropyl ketone, and its derivatives, A., 988.
 2-Pyridyl γ -methoxypropyl ketone, and its hydrochloride, A., 988.
 5-4'-Pyridyl-1-methyl-5-ethylbarbituric acid, manufacture of, (P.), B., 524.
- Pyridyl methyl ketone hydrochloride**, A., 988.
 4-2'-Pyridyl-2-methylpyrrole, and its perchlorate, A., 1253.
 4-3'-Pyridyl-2-methylpyrrole, and its salts, A., 1381.
 4-3'-Pyridyl-2-methylpyrrole-3-carboxylic acid, ethyl ester, and its salts, A., 1381.
 4-2'-Pyridyl-2-methylpyrrole-3:5-dicarboxylic acid, diethyl ester, and its salts, A., 1253.
 4-3'-Pyridyl-2-methylpyrrole-3:5-dicarboxylic acid, diethyl ester, and its pierate, A., 1381.
Pyridylnitropyrzole, A., 760.
 β -2-Pyridylpentan- β -ol, and its derivatives, A., 988.
 β -2-Pyridyl- $\Delta\beta$ -*n*-pentene hydrobromide, A., 988.
N-2-Pyridylphthalamic acid, and its sodium salt, A., 92.
N-2-Pyridylphthalimide, and its salts, A., 92.
 2-(3'-Pyridyl)piperidine, 2,2'-amino-, and its salts, A., 764.
 2,6'-amino-. See Anabasine, α -amino-
 2-(5'-Pyridyl)piperidine, 2,2'-amino-, and 2,2'-chloro-, A., 223.
 β -2-Pyridylpropionic acid, β -hydroxy-, ethyl ester, A., 1253.
 5-Pyridylpyrazole, 3:4-diamino-, 3:4-dinitro-, and its hydrochloride, and 4-nitro-3-amino-, 3-hydroxylamino-, and -3-nitroso-, perchlorate, A., 760.
 5-(3'-Pyridyl)pyrazoles, amino-, chloro-, and nitro-, synthesis of, and their derivatives, A., 96.
 5-(3'-Pyridyl)pyrazole-3-carbamic acid, ethyl ester, dihydrochloride, A., 96.
 5-(3'-Pyridyl)pyrazole-3-carboxylic acid, derivatives of, A., 96.
 3-(3'-Pyridyl)-5-pyrazolone, A., 96.
 9-2'-Pyridyl-3:4-pyridino-7:8:9-triazole, A., 226.
Pyridylpyrrole derivatives, *C*-substituted, synthesis of, A., 1253, 1381.
Pyrimidines, A., 358, 759, 991, 1381.
 refractive indices of, A., 629.
Pyrimidines, thiol-, manufacture of metal complex compounds of, (P.), B., 750.
Pyrimidine nucleotides from thymus-nucleic acid, A., 510.
Pyrimidine series, alkamine ethers of, A., 759.
Pyrites, direct and inverse forms in, A., 1101.
 in South Manchurian coal, A., 1346.
 occurrence of gold in, B., 953.
 recovery of sulphur of, B., 802; (P.), B., 495.
 flash-roasting of, by Nichols-Freeman system, B., 411.
 recovery of magnetic iron oxide from residues from roasting of, (P.), B., 767.
 dust catcher for burners for, (P.), B., 1043.
 use of heat from gases from burners for, (P.), B., 148.
 diffraction of slow electrons by, A., 1308, 1309.
 inner potential of, A., 1309.
 explosivity of mixtures of air and, B., 1146.
 and its flotation tailings, inflammability of, B., 1091.
 oxidation of, A., 602.
 action of magnesium chloride on, B., 225.
 deactivation of, B., 855.
 reactions of, with steam and sulphur dioxide, B., 268.
- Pyrites**, carboniferous, inflammability of, B., 1146.
 production of sulphur from, B., 724.
 in quartz, A., 842.
 Ural, B., 25.
 determination in, of sulphur, A., 1473.
Pyroabietic acid, and its hydrogenation, A., 218.
Pyrocatechol, manufacture of, (P.), B., 443, 716.
 from wood tar, B., 1028.
 absorption of oxygen by, A., 1458.
 equilibrium of, with quinol and resorcinol, A., 1078.
 condensation of, with acetone, A., 80.
 methylene ester, production of, B., 1165.
 derivatives, manufacture of, (P.), B., 894.
 condensing power of, A., 1362.
 physiological activity of, A., 1412.
 borate, production of salts of, (P.), B., 841.
 cyclic ethers of, with ketones, A., 339.
 as reagent for titanium, A., 951.
 detection of, A., 1474.
Pyrocatechol, 4-iodo-, A., 208.
Pyrocatecholdisulphonic acid, salts, mobilisation of calcium by, A., 1020.
Pyrocatechol-3:5-disulphonic acid, sodium salt, complex medicinal compounds of, B., 123.
Pyrochroite, A., 1346.
Pyrocyclonia winkleri, hydrocyanic acid in, A., 1181.
Pyrogallol, production of, from wood tar, B., 1028.
 Raman spectrum of solutions of, A., 1446.
 catalysis by iron of action of, with hydrogen peroxide, A., 940.
 allyl, heptenyl, and hexenyl ethers, and their derivatives, A., 1362.
 3:5-dimethyl 1-propyl ether, A., 615.
 ethers, bases from, A., 1504.
 unsaturated, A., 1362.
 methylene ether, A., 80.
Pyrogenesis, apparatus for, A., 187.
Pyrolusite, electrical rectification by crystals of, A., 12.
Pyrolysis, A., 607, 960, 1223.
 apparatus for, in inert atmospheres, A., 1096.
Pyrometers, precision, A., 598.
 thermoelectric, installation and maintenance of, B., 731, 1052.
Pyrometry, optical, B., 529.
Pyronenes, A., 1127.
 γ -Pyrones, reactivity of carbonyl group in, A., 1378.
Pyrophæophorbide *b* nitrile, A., 763.
Pyrophthalone derivatives, A., 759.
Pyrophyllite, synthesis of, A., 1101.
 crystal structure of, A., 686.
Pyroxenes, A., 1478.
 monoclinic, optical properties and composition of, A., 1101.
 rhombic, symmetry of, A., 813.
Pyroxylin, seasoning of sheets of, (P.), B., 223.
Pyrrhocoris apterus, seasonal variations of fats in, A., 882.
Pyroretio porphyrin V, and bromo-, A., 633.
Pyrrole, and its acetyl derivative, nitration of, A., 221.
 compound from, by oxidation with gold chloride, A., 355.
 compounds with condensed nuclei of, resembling urobilin, A., 1381.
 derivatives, A., 221.
 with attached isocyclic ring, A., 870.
 sulphur derivatives of, A., 627.

Pyrrole, catalytic hydrogenation of homologues of, A., 627.
 polymers of, and their reaction with diazotised anthranilic acid, A., 364.
 formation of porphyrins from aldehydes and, A., 1510.
 fate of, in frogs, A., 1154.
 detection of, with gold, A., 998.
 determination of, photometrically, A., 998.
Pyrrole, 2-nitro-, A., 221.
Pyrrole alcohols, synthesis of, A., 1378.
Pyrrole-alanine, dihydroxy-, isolation of, from gelatin hydrolysates, A., 876.
Pyrrole-blues, A., 1134.
 absorption spectra of, A., 1134.
Pyrrolicarboxylic acids, dibromo-, and 2-thiocyano-, methyl esters, and 2-thiol-, and its methyl ester, A., 222.
 thiol-, A., 627.
Pyrrolidine, colour reactions of, A., 1255.
Pyrroline, constitution of, and its dithiocarbamate, A., 868.
Pyrrolines, constitution of, A., 355.
Pyrrolones, synthesis of, from acetophenone and benzoylformanilide, A., 498.
2-(2'-Pyrrolyl)benzthiazole, A., 1386.
 α -2-Pyrroylethanol, α -amino-, A., 355.
Pyrrolo-salts, complex, A., 1335.
Pyrus communis. See Pears.
Pyruvic acid, anaerobic production of, from alanine, A., 1282.
 oxidation of, produced by *Bacillus coli*, A., 663.
 ethyl, methyl, and propyl esters, 2:4-dinitrophenylhydrazones of, A., 743.
 in brain, effect of tissue poisons on, A., 262.
 in avitaminotic brain, A., 130.
 formation of, from lactic acid in muscle, A., 240.
 phosphate transport by, in muscle, A., 387.
 determination of, A., 1223.
Pyrilium derivatives, formation of, by condensation of saturated ketones, A., 1376.
 formation of, from *o*-hydroxybenzylidene-diacetophenone, A., 354.

Q.

Quanta, inelastic scattering of, with production of pairs, A., 1297.
 light, entropy and temperature of, A., 679.
Quantum mechanics, and chemical force, A., 15, 1305.
 in organic chemistry, A., 1463.
 of particles from new field theory, A., 912.
Quantum theory, A., 1050, 1187.
 relativistic basis of, A., 912.
 elements of, A., 1298.
 electromagnetic fields in, A., 8, 279.
 paradox of, A., 804, 1298.
Quartz, volume and shape of particles of, A., 1098.
 X-ray investigation of deformation of, A., 811.
 selective incrustation of, A., 61.
 polymorphic transformations of, A., 939.
 pyrites in, A., 842.
 stilbite inclusions in, A., 323.
 refractive indices of, in the infra-red, A., 148.
 rotatory power and ultra-violet dispersion of, A., 14.

Quartz, dispersion of optical activity of, A., 435.
 vibration of piezoelectric plates of, A., 18.
 effect of temperature on electrical conductivity of, A., 1196.
 thermal conductivity of, at low temperature, A., 1064.
 effect of heat on inner structure of, B., 901.
 effect of heat treatment on systems of feldspar, kaolin, and, B., 901.
 induction furnaces for melting of, (P.), B., 507.
 conversion of, into cristobalite below 1000° B., 629.
 adsorption of gliadin by, A., 30.
 solubility of, in super-critical steam, A., 441.
 crystallography of, A., 812.
 crystals, X-ray reflectivity and resolving power of, A., 686.
 velocity of sound in, A., 20.
 grog mixes of, B., 803.
 modifications of, in Dinas brick, B., 804.
 uses of, in chemical industry, B., 61.
 production of silicosis by, A., 386, 1022.
 gold-bearing, Canadian, A., 602.
 Ordinary and smoky, spectrography of, from Rincon, California, A., 955.
 piezo-, action of radium and X-rays on, A., 288.
 β -Quartz, piezoelectric and elastic properties of, A., 1310.
Quartz-dolerites, alkaline, from Bijawar, A., 1220.
 late palaeozoic, of Scotland, A., 1345.
Quartzite, calcination of, (P.), B., 454.
 iron, rate of reduction in magnetising roasting of, B., 25.
 of Kupferberg, Silesia, A., 60.
Quaternions, A., 1050.
Quebrachitol, production of explosive by nitration of, (P.), B., 383.
Quicksand, thixotropy of, A., 701.
Quinacridones, formation of, from 2:5-diaminoterephthalic acids, A., 992.
Quinaldine ethiodide, condensation of, with formaldehyde, A., 1379.
 adducts from acetylenedicarboxylic esters, A., 1251, 1252.
Quinaldine acid as reagent in analysis, A., 318, 597, 1094.
Quinazoline platinichloride, A., 1381.
Quinazoline, 2:4-diamino-, and its salts and diacetyl derivative, A., 991.
 2:4-dichloro-, reaction of, with ammonia and methylamine in alcohol, A., 991.
Quinazolines, A., 760, 991, 1134.
 analogous to angostura alkaloids, synthesis of, A., 760.
Quinazoline series, alkamine ethers of, A., 759.
Quince, constituents of, A., 1432.
Quinhydrone, manufacture of, (P.), B., 1133.
Quinic acid, and its derivatives, A., 1365.
 conversion of, into protocatechuic acid by micro-organisms, A., 1540.
 γ -isoQuinicine, and its derivatives, A., 874, 1137.
Quinidine, demethylation of, A., 996.
 action of sulphuric acid on, A., 1136.
 salts, specific rotatory power of, A., 1256.
 oxide base derived from, A., 874, 1137.
 determination of, A., 1259.
 colorimetrically, A., 370.
apoQuinidine, and its salts, A., 1136.
 methyl ether, and its salts, A., 1137.
apoQuinidines, and their salts, A., 227.
epiQuinidine, occurrence of, in cinchona bark, and its benzoyl-*d*-tartrate, A., 1513.

γ -isoQuinidine, and its derivatives, A., 874, 1137.
Quinine, manufacture of, in India, B., 286.
 dielectric potential of, A., 30.
 reduction potential of, A., 706.
 equilibrium of, with antipyrine and phenacetin, A., 448.
 action of sulphuric acid on, A., 1136.
 salts, specific rotatory power of, A., 1256.
 fluorescence of, A., 505.
 aurothiosulphate, A., 366.
 preparation and properties of, A., 49.
 ethyl carbonate, testing of, B., 205.
 hydrobromide, determination of, by cupro-hydrogen bromide, A., 102.
 hydrochloride, compound of caffeine and, (P.), B., 46.
 colour reaction for, B., 78.
 iodobismuthate, determination of, B., 828.
 iodobismuthates, amorphous, composition of, A., 227.
 sulphate, radiation in dehydration of, A., 1055.
 esters, iodobismuthates of, A., 874.
 mercuric compound of, for treatment of syphilis, (P.), B., 1165.
O-chloroformyl derivative, properties of, and its derivatives, A., 366.
 physiological action of, A., 780.
 and its phenylethylbarbiturate, cardiovascular effects of, A., 1018.
 distribution of, in endocrine organs, A., 780.
 determination of, colorimetrically, A., 370.
 in mixed alkaloids, B., 924.
 in chocolate tablets, B., 428.
 in tissues, A., 1018.
apoQuinine, A., 996.
 and its ethers, and their salts, A., 227.
 methyl ether, salts of, A., 1137.
isoapoQuinine, and its salts, A., 1136.
epiQuinine, occurrence of, in cinchona bark, and its benzoyl-*d*-tartrate, A., 1513.
Quinine alkaloids, optical rotation and configuration of, A., 765.
 absorption spectra of, B., 1117.
 rearrangement of, to *epi*-bases, A., 765.
Quininecarboxylic acid, isopropylidene-glycerol ester, salts of, A., 366.
Quinoa, composition of, A., 391.
Quinochromes, A., 1429.
Quinoidine, A., 1513.
Quinoidotoxin, and its derivatives, A., 1513.
Quinol, electrolytic production of, (P.), B., 796.
 diffusion of, in organic liquids, A., 1072.
 equilibrium of, with pyrocatechol and resorcinol, A., 1078.
 oxidation of solutions of, A., 587, 706, 1083.
bis- β -hydroxyethyl ether, (P.), B., 263.
pp'-diphenoxydiphenyl ether, A., 745.
dihydrogen phthalate, (P.), B., 762.
 preservation of halibut-liver oil with, B., 859.
Quinol, 2-amino-, 4-benzoate, A., 484.
periQuinoliazole (N-N), synthesis of, A., 93.
Quinoline compounds, ultra-violet photo-biological sensitisation of, A., 1275.
 with antimony derivatives, A., 368.
 complex compounds of, with cadmium, cobalt, manganese, and zinc halides, A., 222.
 derivatives, A., 1251.

Quinoline derivatives, dipole moments and structures of, A., 1506.
 preparation of, A., 222, 357.
 influence of, on growth of bacteria, A., 537.
di- and *tri-chloroiodides* and *iodo-* cyanide, A., 356.
dicyanides, A., 92.
8-oxymercurichloride, A., 1139.
Quinoline, 8-amino-, antimalarials from derivatives of, A., 500, 989.
 5-amino-8-hydroxy-, 5-propionyl derivative, A., 500.
 8-hydroxy-, Friedel-Crafts reaction with, A., 500.
 precipitation of aluminium with, A., 187.
 compounds of, with alkali metals and zirconium, A., 989.
 sulphate, sterilisation of pathogenic bacteria by, A., 537.
 determination of, A., 639.
 bromo-acidimetrically, A., 999.
 determination with, of cadmium, A., 1473.
 of magnesium, A., 186.
 of thorium, A., 464.
 of vanadium, A., 464.
isoQuinoline, reaction of, with alkali and alkaline earth amides, in ammonia, A., 223.
isoQuinoline, 1-amino-, 1-bromo-, and 1-iodo-, salts of, A., 224.
 aminohydroxy-derivatives, salts of, A., 1508.
 α -nitro-, orientation of, A., 1506.
Quinolines, reaction of, with cyanogen iodide, A., 356.
 amino-, sulphonation of, A., 357.
Quinoline bases, synthesis of, from hydroxymethylenketones, A., 989.
Quinoline series, acids of, A., 1131.
 quinones of, A., 1508.
isoQuinoline series, quinones of, A., 1508.
Quinoline-yellow, production of, (P.), B., 397.
Quinoline-5-carboxylethylamide, 8-hydroxy-, A., 500.
Quinoline-2-carboxylic acid, ferrous salt, magnetic susceptibility of, A., 149.
 hydrochloride, A., 93.
Quinolinedisulphonic acids, amino-, A., 357.
isoQuinoline-7:8-quinone, 5-amino-, acetyl derivative, hydrochloride, A., 1509.
Quinolinesulphonic acids, amino-, A., 357.
Quinolinium ferro-bromide and -chloride, dihydrates, A., 356.
isoQuinoliniummethanols, A., 1131.
 5-Quinolyl ethyl ketone, 8-hydroxy-, and its salts and oxime, A., 500.
 γ -Quinolyl- β -hydroxypropanesulphonbetaine, A., 1111.
 γ -*isoQuinolyl*- β -hydroxypropanesulphonbetaine, A., 1111.
 8-Quinolylmethyl alcohol, and 5-nitro-, A., 1506.
 2-Quinolyl γ -methylaminopropyl ketone hydrochloride, A., 988.
 2-Quinolyl 3-N-methylpyrrolid-2-onyl ketone, A., 988.
Quinone. See Benzoquinone.
Quinones, A., 863.
 manufacture of, (P.), B., 796.
 hydrogenation of, B., 664.
 acidic complexes of, and their halogenation, A., 982.
 action of alkaline hydrogen peroxide on, A., 982.
 alkylated, condensation of, with dienes, A., 1372.

Quinone nucleus, cationoid reactivity of, A., 982.
Quinone-azo-dyes, water-soluble, manufacture of, (P.), B., 797.
Quinophthalone dyes, acid, manufacture of, (P.), B., 985.

R.

R Coronæ Borealis, spectrum of, A., 1046.
Rabbits, feeding of, with rhubarb leaves, B., 972.
 effect of "condition" on colour of body fat in, B., 1163.
 Angora, influence of feeding-stuffs on growth and wool yield of, B., 972.
Rabies, fixed virus of, as antigenic agent, A., 1395.
 inorganic constituents of central nervous system in, A., 1527.
Racemates, resolution of, by formation of active racemates, A., 65.
 active, A., 90.
Racemisation, A., 1223.
 by complex formation, A., 454.
Racquets, tennis, coating of strings of, (P.), B., 143.
Radiation, quantum of, and photographic threshold, A., 4.
 combined action of catalysts and, A., 47.
 impact, effect of magnetic fields on polarisation of, A., 1291.
 mitogenetic. See under Rays.
 resonance, "electrodeless" metal vapour lamp for production of, A., 466.
 scattered, polarisation of, A., 1301.
Radiators, automobile, prevention of corrosion in, (P.), B., 1098.
Radicals, formation of, and ring closure, A., 203.
 free, theory of, A., 283.
 occurrence of, in chemical reactions, A., 77.
 formation of, from organic compounds, A., 62.
 absorption spectra of, A., 1299.
 electron affinity of, A., 1058, 1188.
 magnetic properties of, A., 149.
 aromatic, theory of, A., 810.
 organic, A., 1125.
 preparation of, A., 603.
 magnetic behaviour of, A., 1453.
 in gaseous state, A., 603.
 and thermal decomposition of organic compounds, A., 471.
 detection of, in photo-dissociation, A., 1468.
 organic, reactivities of, A., 1139.
 electron-sharing ability of, A., 1321.
 See also Diradicals.
Radioactive alloys, use of, in study of metals, B., 232.
 atoms, structure of, A., 804.
 elements, A., 678.
 isotopes of, and their disintegration, A., 910.
 production of, A., 142.
 β -ray spectra of, A., 558, 1186.
 β - and γ -ray spectra of, A., 273.
 emission of neutrons by, A., 802.
 photographic plates for study of natural distribution of, A., 839.
 concentration of, by an electric field, A., 802.
 transmutations of, A., 276.
 use of, as indicators in metallography, A., 1048.
 from irradiation of thorium with neutrons, A., 1050.

Radioactive elements, artificial, A., 276.
 deposition of, by electrochemical exchange, A., 1088.
 identification of, A., 947.
 new, artificial production of, A., 911.
 weak, activity of, A., 802.
 indicators. See under Indicators.
 ions, photographic location of, in gelatin, A., 178.
 materials, emission of positrons from, A., 1439.
 energy spectra of positrons from, A., 1439.
 measurements, low-temperature calorimetry in, A., 839.
 methods, application of, in chemistry, A., 6.
 preparations, for use in bath water, etc., (P.), B., 288.
 substances, distribution of, between crystalline and liquid phases, A., 27.
 emission of neutrons from, A., 1440.
 biological action of rays from, A., 1539.
 artificial, A., 1441.
 threads, production of, (P.), B., 766.
Radioactivity, A., 425.
 production of, by neutrons, A., 678.
 new type of, A., 6.
 and nuclear synthesis, A., 7.
 of solids, determination of, by α -ray counting, A., 1295.
 artificial, A., 276, 426, 559, 1050, 1297.
 theory of, A., 276.
 and atomic disintegration and structure, A., 142.
 nuclear structure and, A., 142.
 and Landé's scheme, A., 142.
 production of, by deuteron bombardment, A., 1441.
 produced by neutron bombardment, A., 678, 910.
 induced, A., 558, 803.
 deuteron-induced, transmutation functions for, A., 1296.
 induced by neutrons, A., 142, 276, 558, 559, 803.
 induced by protons and deuterons, A., 276.
 β -Radioactivity of neutrons, A., 1441.
 induced by β -particle bombardment, A., 803.
Radiocæsium, activation of, by neutrons, A., 678.
Radiocolloids, A., 297.
Radio-geology, A., 1099.
Radiographs, multiple Laue spots in, A., 1306.
Radiography, sensitivity of γ -ray method of, A., 320.
 in southern India, B., 1069.
Radio-lead, determination in, of polonium, A., 1095.
Radiometers, sensitivity of bolometers, thermopiles, and, A., 57.
Radio-micrographs, stereoscopic, method of taking, A., 952.
Radionitrogen, period of, A., 559.
Radiopotassium, A., 678.
Radium, at. wt. of, A., 140.
 occurrence of, in connate water, A., 322.
 in north- and middle-German deep waters, A., 1477.
 in field waters and petroleum of Bibi-Eibat oil-field, A., 190.
 in water from Oukhta region, A., 60.
 in granodiorite laecolith from Malka river, A., 60.
 in Californian lavas, A., 726.
 half-life period of, A., 558.
 spectrum and ionisation potential of, A., 138.

- Radium** rays, effect of, on living cells, A., 1534.
 heat of penetrating rays of, A., 275.
 absorption of γ -rays from, by radioactive salts, A., 141.
 fixation of, in soils by plants, B., 73.
 alloy for beam therapy with, A., 723.
 action of, on glycolytic activity of neoplastic tissues, A., 1534.
 spectrographic analysis of, A., 141.
 determination of, in small quantities by the β -ray method, A., 1048.
 apparatus for, A., 723.
 in minerals, A., 1215.
 in rocks and minerals, A., 54.
- Radium-A** and **-C'**, ionisation produced by, in cylindrical chambers, A., 1186.
- Radium-B + C**, atomic disintegrations with rays from, A., 277.
- Radium-C**, positron transformation of, A., 276.
- Radium-D**, molecular changes in radioactive transformation of, A., 6.
 β -rays of, A., 6.
 β - and γ -rays of, A., 677.
- Radium-E**, low-energy β -rays of, A., 275.
 energy spectrum of β -rays of, A., 1295.
- Radium emanation**. See Radon.
- Radon**, neutron emission of, A., 1296.
 ionisation produced by, in cylindrical chambers, A., 1186.
 influence of hot water on air and, dissolved in cold water, A., 928.
 vapour pressure and condensation of, at low temperatures, A., 925.
 partition coefficient of, between gases and water from springs, A., 953.
 chemical action of, A., 1469.
 liberation of, by radioactive cells in drinking-glasses, A., 1440.
 radioactive materials from, in air of Santa Fe, A., 1101.
 implants, measurement of, A., 1217.
 exhalation of, from soils, A., 191.
 in springs of Korea, A., 60.
 influence of, on internal secretion, A., 1161.
 effect of, on phosphorus elimination by muscle, A., 1023.
 determination of, in small quantities, apparatus for, A., 723.
 in the atmosphere, A., 54.
- Rags**, effect of temperature on beating of paper stock from, B., 489.
- Ragi**, phosphate fertilisers for, B., 471.
 nutritive value of, A., 1153.
- Ragweed**, ultrafiltration of pollen extracts of, A., 549.
- Railway stock**, use of treated wood in, B., 852.
- Rain water**. See under Water.
- Raisins**, seedless, vitamins in, B., 572.
- Raisin oil**, uses of, B., 427.
- Ramalina scopulorum**, constituents of, A., 1501.
- Raman effect**, A., 146, 428, 429, 680, 681, 914, 1190.
 and constitution, A., 611, 853.
 and free rotation, A., 281, 565.
 and light scattering, A., 914.
 and dipole moment in relation to free rotation, A., 12, 428.
 and Kerr effect, A., 565.
 in relation to temperature, A., 564.
 and phenomena of "wings," A., 564, 914.
 intensity of, A., 11, 1445.
 carbon isotope replacements in, A., 1190.
 linking energies from, and from thermochemical data, A., 1189.
 of higher alcohols, A., 11.
- Raman effect** in amorphous substances, A., 564.
 in conjugate double linkings, A., 564.
 in electrolytic solutions, A., 428.
 in liquids, A., 1054.
 temperature control for, A., 188.
 influence of intermolecular action on, A., 1446.
 with metallic halides, A., 1053.
 of molecular compounds, A., 429.
 in organic compounds, A., 11, 73, 146, 428, 681, 957, 1054.
 of fused salts, A., 681.
 in solutions, A., 1053.
 of triatomic molecules, A., 11, 145.
 with penta-atomic molecules, A., 807.
 bibliography on, A., 1445.
 analytical applications of, A., 1335.
 rotational, of gases, A., 564.
 in liquids, A., 146.
- Ramie**, swelling of, in alkali, B., 303.
 influence of purification and mercerisation on, B., 267.
 acetylation of swollen fibres of, A., 42.
- Ramigenic acid**, formation and structure of, A., 898.
- Rana esculenta*. See Frogs, green.
- Rana nigromaculata*. See under Frogs.
- Rancidity**, photochemical studies of, B., 1101.
- Raoult's law**, deviations from, A., 583.
- Rape**, analysis of, A., 266.
- Rape oil**, influence of, on iodine value of pig's fat, B., 172.
 partly-hydrogenated, fatty acids and glycerides in, B., 1054.
- Rapeseed oil**, German, purification of, B., 597.
- Raspberries**, composition of, A., 1432.
 sprays for control of beetle on, B., 869.
 control of *Byturus tomentosus* on, B., 1013.
- Raspberry syrup**, manufacture of, in Germany, B., 76.
- Rats**, non-utilisation of alcohol by, during exercise, A., 387.
 effect of addition of minerals and sucrose to milk diet of, A., 114.
 low calcium content in, A., 1274.
 lactation in, A., 1523.
 control of, in paddy fields, B., 517.
 albino, effect on, of diet poor in inorganic salts but containing edestin, A., 892.
 albino and wild, fasting, protein and energy metabolism of, A., 112.
 black-haired, pigmentation in, A., 1271.
 male, maternal behaviour in, A., 1171.
 white, composition of, in avitaminosis-A, A., 1034.
- Rauwolfia serpentina*, alkaloids of, A., 636.
- Rays**, emission of, in biological and chemical phenomena, A., 1055.
 effect of, in biology, A., 1023.
 of comparable energy to that of soft cosmic rays, A., 559.
 black-body, equilibrium of, A., 805.
 cathode, effect of temperature on interference with, A., 919.
 tubes for. See under Electric discharge tubes.
 retardation of, by atomic nuclei, A., 1293.
 ionisation effect of, in air, A., 1293.
 K-electron ionisation of silver by, A., 1047.
 reflexion of, from crystals, A., 1306.
 effect of, on hydrophobic sols, A., 821.
 coloration of metallic salts by, A., 1446.
 low-voltage, effect of, on photographic film, A., 1332.
- Rays**, cathode, slow, secondary radiation produced by, at thin metallic layers, A., 1439.
 corpuscular, investigation of, with double ionisation chamber, A., 278.
 potential of interaction of, A., 278.
 cosmic, A., 560, 803.
 theory of, A., 1297.
 effect of altitude on production of, A., 560.
 classification of, A., 426.
 composition of, A., 8.
 nature of, A., 427, 1187.
 corpuscular components of, A., 560.
 new component of, A., 804.
 positively-charged component of, A., 8.
 ultra-penetrating corpuscles of, A., 278.
 ions of, A., 1187.
 secondary photons in showers of, A., 1442.
 counters for, A., 143.
 recording meter for, A., 188.
 directional measurements on, A., 1297.
 variation of intensity of, with pressure, A., 803.
 absolute intensity of, A., 1050.
 vertical intensity of, A., 1442.
 effect of galactic rotation on, A., 911.
 absorption of, A., 143, 560, 1050, 1297.
 curves of, A., 278.
 by elements, A., 804, 1442.
 by rock salt, A., 8.
 study of ionisation jumps due to, by means of liquid dielectrics, A., 911.
 intensity of burst-production from, A., 1442.
 high energy neutrons from bursts of, in aluminium, A., 1442.
 influence of filtration on shower-producing properties of, A., 679.
 geographic study of, A., 1442.
 diurnal variation of, A., 911.
 and Nova Herculis, A., 1442.
 secondary effects of, A., 426, 679.
 at high altitudes, A., 911.
 below a water screen, A., 804.
 secondary and tertiary particles produced by, A., 679.
 ionisation by radioactive rays and, A., 426.
 disintegration of heavy atoms by, A., 426.
 nuclear disintegration by, A., 143.
 transformation of, in matter, A., 911.
 comparative measurements with γ -rays and, A., 559.
 action of, on living organisms, A., 247.
 corpuscular, absorption of, A., 1050.
 primary, A., 8.
 corpuscular theory of, A., 1442.
 ions in, A., 1442.
 secondary effects of, A., 1297.
 secondary, penetrating power of, A., 1297.
 electron, scattering absorption of, A., 677.
 high-energy, formulae for absorption of, A., 278.
 high-voltage, biological effects of, A., 120.
 infra-red, quenching of phosphorescence by, A., 565.
 ionic, A., 682.
 mitogenetic, A., 400.
 investigation of, with the counter tube, A., 1302.
 molecular, A., 274, 282.
 diffraction of, by crystals, A., 140.
 space-charge in, A., 432.
 neutral and positive, A., 274.
 positive, neutralisation of, A., 274.

- Rays, positive, ring deposits on glass produced by bombardment with, A., 1469.**
 radioactive, chemical effects of, A., 832.
 Rayleigh, fine structure of, A., 565, 807.
 Röntgen. See X-rays.
 supersonic, effect of, on enzymes, A., 400.
 ultra-, corpuscles of, A., 143.
 ultra-cosmic, electric deflexion of, A., 8.
 vertical, variation of intensity of, with pressure, A., 803.
- α -Rays, errors in measurement of, A., 6.**
 Bragg curves for, A., 677.
 emission of, from targets bombarded by deuterons, A., 141.
 field between atomic nuclei and, A., 1443.
 relation between range and velocity of, A., 275.
 scattering of, by nuclear fields, A., 1048.
 ionisation curves of, A., 1295.
 registration of, A., 1048.
 specific ionisation of, A., 910.
 absorption of, A., 275.
 observation of, in presence of γ -rays, A., 802.
 tracks of, in photographic emulsions, A., 910.
 photographs of, A., 275.
 branched tracks of, on thickly-coated photographic plates, A., 6.
 energy of, A., 141, 910.
 collisions of, in hydrogen, A., 1295.
 chemical action produced by, A., 944.
 from actinium family, A., 1440.
 in light nuclei, A., 278.
- β -Rays, theory of, A., 679.**
 Fermi theory of, A., 1048.
 and nuclear stability, A., 1186.
 absence of neutrons in emission of, A., 1441.
 diffraction of, A., 275.
 continuous spectrum of, A., 6.
 magnet for spectrography of, A., 723.
 production of positive electrons by, A., 425.
 electron lenses for, A., 1440.
 photographs of tracks of, A., 275.
 energy of, A., 141, 910, 1048.
 decay of, A., 1048.
 disintegration of, A., 6.
 double disintegration of, A., 1440.
 action of, on rock salt, A., 273.
 from actinium family, A., 1440.
 from polonium, A., 1440.
- γ -Rays, emission of, from absorption of slow neutrons, A., 1441.**
 in nuclear reactions, A., 276.
 excitation of, by slow neutrons, A., 1296.
 measurement of heat liberated in absorption of, A., 598.
 photo-electric absorption of, in heavy elements, A., 678.
 diffusion of, A., 6.
 production of electrons and positrons from internal conversion of, A., 557, 1187, 1439.
 positrons from, A., 8.
 energy of, A., 141.
 action of, on rock-salt, A., 273.
 comparative measurements with cosmic rays and, A., 559.
 comparison of dosage of, with that of X-rays, A., 677.
 from actinium family, A., 1440.
 from artificial nuclear disintegrations, A., 141.
 from carbon bombarded by deuterons, A., 1442.
 from slow neutrons, A., 141.
 hard, interaction of, with atomic nuclei, A., 678.
- γ -Rays, hard, scattering of, and annihilation radiation, A., 426.**
 nuclear, excitation of, A., 678.
 secondary, production of, by passage of neutrons through matter, A., 1186.
 associated with absorption of hard γ -rays, A., 910.
 detection of, from impact of α -particles on heavy elements, A., 1049.
- H-Rays. See H-Particles.**
- X-Rays, history of, A., 685.**
 calculation of terms for, A., 1185.
 anode temperature and emission of, A., 3.
 excitation potential of satellites of, in L series, A., 1184.
 filtration curves for, A., 679.
 crystal and slit systems in physics of, A., 1193.
 film for, (P.), B., 750.
 screens for, B., 507.
 fluorescent substances for, (P.), B., 495.
 tubes, anode for, (P.), B., 507.
 pumps for evacuation for, A., 1340.
 casting molybdenum buttons for, A., 1218.
 porcelain, A., 57.
 super-voltage tubes and generating apparatus for, B., 1001.
 lithium windows for, A., 57.
 precision measurements of, A., 685.
 intensity of, in thick targets of nickel, A., 1438.
 measurement of absolute intensity of, with Geiger-Müller counter, A., 150.
 measurement of wave-length of, by refraction in quartz, A., 4.
 wave-lengths of, by plane-grating vacuum spectrophotograph, A., 1046.
 determination of strength of, A., 811.
 efficiency constants for, A., 556.
 Maxwell reciprocal law applied to, A., 918.
 derivation of absorption curves of, from single curves, A., 284.
 absorption and scattering of, A., 1184.
 reflexion of, by crystals, A., 151.
 from powders, A., 16.
 photometry of, A., 570, 908.
 refractive index for, A., 150.
 diffraction of, by crystals, A., 433.
 by long-chain aliphatic liquids, A., 921.
 stress analysis by, A., 1449.
 dispersion of, by nickel, A., 686.
 polarisation of, from thin aluminium anti-cathodes, A., 1439.
 rotation of plane of polarisation of, A., 1439.
 scattering of, at small angles, A., 685.
 by conduction electrons, A., 1438.
 by fluids with polyatomic molecules, A., 572.
 by polyatomic gases, A., 686.
 by polyatomic liquids, A., 813.
 in solutions of heavy molecules, A., 1061.
 effect of temperature on, by solids, A., 908.
 diffuse scattering of, from neon-like crystals, A., 1448.
 back scatter from, A., 811.
 scattering coefficients of, at short wave-lengths, A., 1293.
 distribution of, within crystals, A., 685.
 technique for work with, under high pressures, A., 1217.
 crystal and fibrous structure diagrams by means of, A., 687.
 ionisation in gases by, A., 682.
- X-Rays, colouring of glass by, A., 1469.**
 oxidation of arsenites, ferrocyanides, and selenites by, A., 1469.
 blackening of photographic emulsions by, A., 177; B., 783.
 formation of images with, A., 1331.
 action of, on water, A., 46.
 decomposition of water by, in presence of bromides and iodides, A., 1468.
 errors in diascopy of, A., 1193.
 sensitivity of analysis with, A., 1471.
 sensitivity of organic compounds to, A., 832.
 determination of h by, A., 1298.
 inhibition of cell-division by, A., 1276.
 bactericidal effects of, A., 409.
 action of, on bacteria, A., 1170.
 from thick targets, A., 138.
 inhomogeneous, absorption coefficient of, A., 272.
 monochromatic and white, A., 687.
 polarised, intensity of, A., 1046.
 secondary, in single crystals, A., 1193.
 soft, action of, on bacteria, A., 537.
 on glass, B., 591.
 ultra-soft, spectrograph for measurements with, A., 1217.
 spectroscopy of, A., 1306.
- Razors, steel strip for blades of, (P.), B., 106.**
- Reactions, apparatus for, (P.), B., 530.**
 efficiency of continuous apparatus for, B., 609.
 carrying-out of, (P.), B., 1025.
 apparatus for, (P.), B., 881.
 tubular ovens for, in tubes, A., 319.
 mechanism of, A., 1080, 1206, 1362.
 study of, with radioactive bromine, A., 1441.
 emission of electrons in, A., 1293.
 thermodynamics of thermal effect of, A., 169.
 kinetics of, A., 707.
 velocity of. See Velocity of reaction.
 induction of, A., 1328.
 following course of, by potentiometric measurements, A., 937.
 cycles of, A., 707.
 activated complex in, A., 586.
 unstable intermediate products in, A., 39.
 in electric glow discharge, A., 45.
 at liquid interfaces, observation of, A., 58.
 in gels, morphology of, A., 1321.
 at high pressures, apparatus for carrying-out of, (P.), B., 1025.
 in which reactants diffuse through membrane, A., 1328.
 in solution, effect of pressure on, A., 1082.
 addition and substitution, stereochemistry of, A., 211, 219, 341, 349.
 aromatic side-chain, in relation to polar effects of substituents, A., 710.
 asymmetric, A., 972.
 bimolecular, orientation effects in, A., 827.
 bimolecular association, steric factor in, A., 1464.
 catalytic. See Catalytic reactions.
 chain self-propagating, mechanism of, A., 708.
 constant-volume, A., 446.
 diatomic, and primary chemiluminescence, A., 1464.
 doublet, system of, A., 1348.
 elimination, effect of poles and polar linkings on, A., 853.
 exothermic, control of, (P.), B., 531.
 velocity of. See under Velocity.
 explosive. See Explosions.

Reactions, gaseous. See Gas reactions.
 heterogeneous, in silent electric discharge, A., 46, 177, 700.
 third-phase, A., 588.
 high-temperature, study of, by X-ray spectrography, B., 1001.
 ionic, mechanism of, A., 452, 1464.
 critical increment of, A., 1464.
 effect of electrolytes in, A., 42.
 isothermal, kinetics of, A., 937.
 multiple, of very high energy, A., 15.
 organic, electronic theory of, A., 324.
 heats of, A., 304.
 kinetics of, A., 1463.
 effect of substituents on, A., 1465.
 heterogeneous, kinetics of, A., 1466.
 periodic, emission wave theory of, A., 453.
 study of, by physico-chemical analysis, A., 453.
 photochemical. See Photochemical reactions.
 photosensitive, A., 1331.
 physico-chemical, electric charges of disperse systems in, A., 1318.
 polymerisation, initiation of, (P.), B., 881.
 rapid, kinetics of, A., 1082.
 reversible, displacements in, A., 301.
 side-chain, influence of nuclear substituents on, A., 1191, 1209.
 slow, kinetics and entropy changes of, A., 1463.
 surface, at low pressures, A., 711, 941.
 technical, A., 74.
 termolecular, theory of, A., 937.
 unimolecular, activation energy of, A., 1206.
Reactivity, electrostatic factors affecting, A., 308.
 and absorption of light, A., 144.
Reagents, analytical, organic compounds as, A., 951.
 inorganic, preparation of, A., 715.
Realgar, crystal structure of, A., 323.
 from Komana, A., 1100.
Recklinghausen's disease, blood-magnesium in, A., 1270.
Records, sound. See Sound records.
Recrystallisation, formation of nuclei in, A., 1307.
Red lead, micrography of, B., 723.
 ground, thickening of, B., 1102.
 oxidimetric analysis of, B., 1004.
Red top, nitrogen in infusions of, A., 265.
Reductive acid, and its derivatives, formation of, by hydrolysis of alginic acid, A., 327.
Reduction, influence of hydrogen ions in, A., 1088.
 biological, A., 130.
 catalytic. See under Catalytic.
Reduction potentials. See under Potentials.
*iso*Reductodehydrocholic acid semicarbazone, A., 1237.
Reeds, Chinese, and their pulp, B., 264.
Refraction, of mixed liquids, A., 24.
 atomic, determination of, A., 916.
 double magnetic, thermal variation of, A., 568.
 superposition of electric birefringence and, A., 149.
 and critical solution point, A., 14.
 of organic liquids, A., 149.
 of paramagnetic solutions of rare-earth salts, A., 149.
 equivalent, of strong electrolytes, A., 932.
 of salts and acids in aqueous solution, A., 931.
 molecular, relation of, to b.p. and molecular volume, A., 916.
 specific, of saturated synthetic hydrocarbon mixtures, A., 1479.

Refractive index, determination of, by immersion method, A., 1475.
 of crystals for cathode rays, A., 570.
 of liquids, A., 1097.
 determination of, B., 833.
 of aqueous solutions of electrolytes, A., 1201.
 for X-rays, A., 150.
Refractometers, micro-, A., 320.
Refractometry, precise prism conditions for, A., 1097.
Refractories, manufacture of, (P.), B., 101, 455.
 control of particle size in, B., 356.
 glassy phase in manufacture and use of, B., 725.
 forsterite and magnesite silicates for, B., 768.
 texture of, B., 949.
 variations in pyrometric cone equivalent of, after reheating, B., 546.
 properties and applications of, B., 546.
 determination of thermal properties of, B., 1143.
 thermal conductivity of, B., 356, 406, 546.
 for cast-iron foundries, B., 993.
 from Georgian kaolin, B., 992.
 basic, manufacture of, (P.), B., 631.
 for steel-melting furnaces, B., 22.
 clay, firing of, with by-product coke-oven gas, B., 949.
 fireclay, B., 227.
 gasworks, texture and durability of, B., 949.
 insulating, B., 356.
 plastic, production of, (P.), B., 993.
 silica, Young's modulus of elasticity of, B., 307.
 silicate, determination in, of ferrous iron, B., 949.
 silicon carbide, manufacture of, (P.), B., 61.
 zirconium, production of, (P.), B., 805.
Refractory articles, manufacture of, (P.), B., 407.
 glazed, manufacture of, (P.), B., 851.
 siliceous, mixes for, (P.), B., 1095.
 blocks, magnesite, production of, (P.), B., 150.
 bodies, glazing of, (P.), B., 1095.
 bricks. See under Bricks.
 glass. See under Glass.
 linings, for furnaces, (P.), B., 902.
 for open-hearth furnaces, production of, (P.), B., 950.
 for ovens, B., 23.
 for rotary melting furnaces, (P.), B., 993.
 materials, (P.), B., 1044.
 manufacture of, (P.), B., 25, 950.
 from sintered magnesite, (P.), B., 993.
 determination of specific heat of, at high temperatures, B., 61.
 permeability of, to gases, B., 188, 406.
 to hydrogen, B., 674.
 action of alkalis on, B., 1094.
 effect of alumina-silica ratio in, on resistance to metal oxides, B., 356.
 corrosive action of slags on, B., 851.
 testing of, for industrial firing, B., 406.
 for glass tanks, (P.), B., 188.
 for ovens for sodium sulphide production, B., 406.
 compressed, manufacture of, (P.), B., 993.
 porous, manufacture of, (P.), B., 546.
 special, B., 630.
 products, manufacture of, (P.), B., 546.
 magnesite, manufacture of, (P.), B., 455.

Refractory stones, relation of porosity to properties of, B., 674.
Refrigerants, B., 881; (P.), B., 434, 1074.
Refrigerating systems, (P.), B., 49.
 detection of leaks in, (P.), B., 1074.
Refrigeration, (P.), B., 338, 657, 833, 1121.
 filling of absorber-generator for, (P.), B., 578.
 use of solution cycles for, B., 529.
Refrigeration apparatus, absorption, filling material for, (P.), B., 386.
 ammonia, temperatures of evaporation and liquefaction in, B., 735.
Refrigerators, brine for, (P.), B., 543.
 control of heat transfer in, (P.), B., 1074.
 heat treatment of evaporators for, (P.), B., 832.
 heat insulation for, (P.), B., 931.
 paper heat insulation for, (P.), B., 85.
 tubular heat exchangers for, (P.), B., 882.
 absorption, solvents for, (P.), B., 1074.
 ice, (P.), B., 786.
Refuse, burning of, (P.), B., 55.
 household, disposal of, (P.), B., 528.
 town, rotary furnaces for combustion of, (P.), B., 336.
 wet, burning of, (P.), B., 576.
Regularobutaginic acid, A., 1502.
Regularobutofloxin, A., 1502.
Relays, thermostatic, A., 319.
Rennin, effect of, on diastatic power of ungerminated grains, A., 1024.
Renoflavin, vitamin-B₂ activity of, A., 545.
Reproduction in sows, effect of vitamin-A-deficient diets on, A., 792.
Resazurin, detection of hyposulphites, sulphoxylates, and nascent hydrogen with, A., 184.
Resins, B., 1103.
 constituents of, A., 623.
 production of, in German forests, B., 1103.
 in bituminous coals, A., 1347.
 extraction of, from wood, B., 798.
 treatment of, (P.), B., 263.
 hardening of, B., 33.
 plasticisers for, (P.), B., 194.
 hexanone as solvent for, B., 91.
 density of solutions of, in various solvents, B., 960.
 production of emulsions of, with water, (P.), B., 860.
 colloidal properties of, B., 417.
 hydrogenation of, (P.), B., 736.
 production of heat-resistant coatings of, (P.), B., 914.
 phenols from, and their biogenetic relations, A., 627.
 mixtures of mineral oils and, for insulation, (P.), B., 11.
 formation of, in plants, A., 796.
 microscopy of, B., 129.
 detection in, of benzoic and cinnamic acids, B., 684.
 determination in, of unsaponifiable matter and salted-out substances, B., 815.
Resins, natural, B., 33, 160, 239.
 treatment of, (P.), B., 111.
 conversion products of, (P.), B., 467.
 composition of cellulose acetate and, (P.), B., 735.
 uses of, B., 160.
 Brazil juthaicica, use of, in oil varnishes, B., 1103.
 copal, esterified, use of, in varnishes, B., 510.
 Congo copal, moulding preparation from, (P.), B., 320.

Resins, natural, Congo copal, production of esters of, B., 1151.
 fossil, in brown coals, A., 1347.
 guaiacum. See Guaiacum resin.
 gutta-percha, separation of constituents of, (P.), B., 467.
 jalap, evaluation of, B., 653.
 kauri gum, removal of colouring matter from, (P.), B., 195.
 lac, liquid-extraction of, B., 1004.
 lacquer, production of, by benzylation of proteins, B., 1151.
 makhorka, fractionation of, A., 133.
 phenolic, constitution of, and their biogenetic relationships, A., 218.
 constituents of, A., 860.
 pine. See Pine resin.
 rubber, A., 134.
 scammonium, A., 87.
Resins, synthetic, B., 194 : (P.), B., 321.
 production of, (P.), B., 112, 161, 240, 278, 368, 685, 737, 816, 915, 960, 961, 1005, 1056, 1057, 1153.
 from hydrocarbons, B., 735.
 from molasses, (P.), B., 915.
 from Novolaks, (P.), B., 915.
 from petroleum, (P.), B., 1005.
 from petroleum hydrocarbons, B., 319 ; (P.), B., 1056.
 from proteins, (P.), B., 70.
 from urea, thiocarbamide, etc., (P.), B., 112.
 from vinyl chloride, B., 1103.
 manufacture and use of, B., 320.
 use of casein, cellulose, etc., in, B., 1151.
 use of triethanolamine in, B., 1151.
 dehydration of, (P.), B., 1153.
 dyes for, (P.), B., 57.
 plasticisers for, (P.), B., 161.
 adsorptive properties of, B., 465.
 dispersion of, in liquids, (P.), B., 34.
 production of emulsions of, (P.), B., 816.
 esterification of, (P.), B., 112.
 impregnation with, for bearings, B., 385.
 of fabrics, (P.), B., 450.
 finishes for fabrics from, B., 1041.
 bonding of fibre boards with, for electrical purposes, B., 466.
 impregnation of fibrous materials with, (P.), B., 450.
 lining of vessels with, (P.), B., 321.
 production of laminated articles with, (P.), B., 111.
 production of laminated fibrous materials with, (P.), B., 1103.
 testing of mouldings, laminated boards, etc., of, B., 684.
 compositions of polysulphide plastics and, (P.), B., 111.
 for printing ink, B., 815.
 for varnishes, B., 161.
 acetaldehyde-phenol, manufacture of, (P.), B., 737.
 acetaldehyde, B., 510.
 aldehyde-amine, manufacture of, (P.), B., 1005.
 aldehyde-cyclic ketone, production of, (P.), B., 1154.
 aldehyde-urea, manufacture of, (P.), B., 112.
 alkyd, manufacture of, (P.), B., 112, 240, 278, 736, 816, 1153.
 effect of butyl alcohol in compositions of, B., 598.
 coating compositions from, (P.), B., 1152.
 oil-modified, (P.), B., 737.
 determination in, of phthalic acid, B., 1161.
 alkyd and phenolic, B., 511.

Resins, synthetic, alkyd-phenolic, (P.), B., 467.
 ammoniacum, constituents of, A., 219.
 aniline-formaldehyde, manufacture of, (P.), B., 368.
 aniline- and phenol-formaldehyde, production of articles from, (P.), B., 467.
 carbohydrate derivative, manufacture of, (P.), B., 1056.
 chlorinated, stabilisation of, (P.), B., 13.
 cold-moulding, manufacture of, (P.), B., 1057.
 colourless, manufacture of, (P.), B., 1153.
 coumarone, uses of, B., 161.
 dialkyd, flexible, manufacture of, (P.), B., 279.
 formaldehyde-phenol and -cresol, B., 1152.
 formaldehyde-urea, B., 194.
 production of, (P.), B., 111, 467, 1005, 1056.
 production of sheet plastic materials from, (P.), B., 69.
 furfuraldehyde-phenol, production of, (P.), B., 737.
 glycerol phthalate, in quick-drying house paints, B., 31.
 glyptal, reaction in formation of, B., 465.
 manufacture of, (P.), B., 112.
 hardenable, manufacture of articles of, (P.), B., 599.
 hexamethylenetetramine-phenol, B., 1152.
 containing metal compounds, production of, (P.), B., 961.
 oil-soluble, manufacture of, (P.), B., 737.
 production and uses of, (P.), B., 1154.
 phenol, production of, (P.), B., 34.
 phenol-aldehyde, manufacture of, (P.), B., 112.
 compositions from, (P.), B., 861, 1153.
 oil-soluble, production of, (P.), B., 511.
 phenol-formaldehyde, B., 1152.
 constitution of, B., 319.
 manufacture of, (P.), B., 195, 240, 321, 1005.
 for varnishes, B., 815.
 odourless, manufacture of, (P.), B., 736.
 oil-soluble, production of, (P.), B., 684.
 water-soluble, (P.), B., 321.
 phenolic, manufacture of, (P.), B., 111, 861, 1153.
 moulding properties of, B., 960.
 mixtures of, with rubber, for moulding, B., 1152.
 plywood adhesive from, B., 1103.
 use of, in chemical works, B., 466.
 in oil varnishes, B., 69, 914.
 in varnishes, B., 366.
 mouldable, (P.), B., 816.
 oil-soluble, varnishes from, B., 277.
 soluble, B., 69.
 phthalic acid, use of, in American varnishes, B., 239.
 polyhydric alcohol-polybasic acid, production of, (P.), B., 736.
 polyvinyl, manufacture of films, sheets, threads, etc., of, (P.), B., 1153.
 pyridine, manufacture of, (P.), B., 511.
 transparent, manufacture of, (P.), B., 418.
 vinyl, production of, (P.), B., 816.
 production of filaments, films, etc., from, (P.), B., 18.
 vinyl acetate, B., 319.
 xylentic, manufacture of, (P.), B., 1005.
Resin esters, acid value of, B., 599.
Resin soaps, drying of, by atomisation, B., 814.
 plastic properties of, A., 701.
Resinols, A., 87.

Resorcinol, recovery of, (P.), B., 219.
 adsorption of, from aqueous solution by carbon, A., 160.
 crystal structure of, A., 286.
 compressions and specific volumes of solutions of, A., 1317.
 binary systems containing, A., 971.
 equilibrium of, with pyrocatechol and quinol, A., 1078.
 condensation of, with adip- and glutar-dinitriles, A., 1372.
 with α -chloroisobutyl cyanide and isobutaldehyde cyanohydrin, A., 1371.
 mercury alkyl salts, A., 202.
 butyl β -bromoethyl ether, quaternary salts from, (P.), B., 1132.
 di- β -methylallyl ether, A., 483.
 derivatives, fungicidal action of, B., 1110.
 reaction of serum to, A., 1519.
 manufacture of flakes of, (P.), B., 894.
 determination of, with nitrites, B., 584.
Resorcinol, 6-bromo-, 3-benzoate, 4:6-dibromo-, *mono*- and *di*-benzoates and dimethyl ether, and 4-*mono*- and 2:4-*di*-bromo-6-nitro-, 3-methyl ethers, A., 1233.
 2:4:6-*tribromo*-, 3-benzoate, 2:4-*dibromo*-6-nitro-, and its 3-benzoate, 4:6-*di*-bromo-2-nitro-, and 6-nitro-, 3-methyl ether, A., 1234.
 4-chloro-, and 2-nitro-, coumarins from, A., 1503.
Resorcinnoldiphenine, *dibromo*-, mercury derivative, A., 1161.
Resorcinnolglucosides, A., 1485.
 γ -Resorcinaldehyde dimethyl ether, synthesis of, and its semicarbazone, A., 83.
 β -Resorcyclic acid, *o*-hydroxydiphenyl ester, A., 1233.
 β -Resorcyclic acid, 5-chloro-, preparation of, and its acetyl derivative, A., 976.
Resorufin, use of, in detection of diazonium salts and primary amines, A., 228.
Respiration, mechanism of, A., 519, 777.
 effect of, on energy exchange and carbohydrate metabolism, A., 520.
 effect of 4:6-dinitro-*o*-cresol on, A., 395.
 effect of 2:4-dinitrophenol on, A., 395.
 effect of opium alkaloids on, A., 528.
 of animal tissues, significance of fumaric acid in, A., 1406.
 in anoxæmia, A., 371.
 of mammalian tissues in hydrogen cyanide, A., 1405.
 of fresh mammalian tissues, A., 1405.
 of plants. See under Plants.
 cellular, stimulant action of dinitro-derivatives on, A., 526.
 fætal, A., 1141.
Respirators, mercury vapour adsorbents for, (P.), B., 1072.
 smoke filters for, (P.), B., 5.
 for protection against carbon monoxide, B., 784.
 industrial, B., 207, 526.
 See also Gas masks.
Respiratory appliances, oxygen, material for, (P.), B., 148.
Respiratory quotient in poikilotherms, A., 1391.
 in normal and tumour tissues, A., 1529.
 of rats on fat-deficient diet, effect of hydrogenated fat on, A., 390.
Retene derivatives, A., 1386.
 disulphide and disulphoxide, A., 1386.
Retene, 6-thiol-, and its benzoyl derivative, A., 1386.
Retorts, (P.), B., 82, 530.
 operation of, (P.), B., 87.

- Retorts**, effect of combustion gases containing sulphur on metal walls of, B., 593.
for carbonisation, etc., (P.), B., 661.
for distillation of coal, peat, shale, wood, etc., (P.), B., 890.
chamber, vertical, (P.), B., 212.
coking, (P.), B., 1033.
gas, operation of, (P.), B., 342.
recovery of waste heat from, B., 612.
horizontal, leakage in, B., 341.
vertical, (P.), B., 9.
repair and maintenance of, B., 340.
horizontal, conservation of heat energy in, B., 341.
rotary, heat treatment of materials by gases in, (P.), B., 530.
vertical, heating of, (P.), B., 981.
continuous, for small gas works, B., 612.
upwardly-heated, B., 534.
- Retroneanol**, and its derivatives, A., 365.
- Retrorsine**, and its derivatives, A., 365.
action and toxicity of, A., 1158.
- 6-Retylthiolacetic acid**, A., 1386.
- Reychler's acid**, salts, anomalous mutation of, A., 1246, 1502.
- l-Rhamnoscorbic acid**, A., 608.
- l- α -Rhamnohexonic acid**, derivatives of, A., 66.
- l- α -Rhamnohexonolactone**, synthesis of, A., 66.
- Rhamnose** *p*-toluenesulphonate, Walden inversion in, A., 199.
- β -1-l-Rhamnosido-6-d-glucose**, chloro-, synthesis of, and its acetates, A., 200.
- β -Rhamnosyliminoertronic acid**, ethyl and methyl esters, A., 1108.
- β -Rhamnosylimino- α -ethylcrotonic acid**, ethyl ester, A., 1108.
- Rhamnosylimino- α -methylcrotonic acid**, ethyl ester, A., 1108.
- δ -Rhamnosylimino- Δ^7 -penten- β -one**, A., 1108.
- Rhenium** from Australian molybdenite, A., 716.
optical constants of, A., 814.
electroplating with, B., 233, 555, 809.
self-ionisation of sodium and caesium at glowing surfaces of, A., 4.
paramagnetism of, A., 19.
catalytic properties of, A., 830.
- Rhenium compounds**, determination of, volumetrically, A., 464.
- Rhenium chloride**, paramagnetism of, A., 289.
double salts of, with caesium and rubidium chlorides, A., 946.
phosphides, A., 302.
Perrhenic acid, reduction of, A., 310.
- Rhenium organic compounds**, complex, with pyridine, A., 716.
Rhenium oxythiocyanate, A., 593.
- Rhenium detection** :—
analytical chemistry of, A., 464.
detection of, polarographically, in manganese salts, A., 838.
- Rheum hybridum**. See *Rhubarb*.
- Rheumatism**, carbon monoxide in blood in, A., 774.
glutathione content of blood in, A., 381.
punctate basophilia in, after chrysotherapy, A., 1403.
preparation for treatment of, from bees' poison, (P.), B., 478.
in children, acid metabolism in, A., 518.
acute, aetiology of, A., 888.
chronic, anaemia in, A., 1268.
- Rhinodon typicus**, liver oil from, A., 1144.
- Rhizobium**, effect of nitrogenous compounds on respiratory quotient of, A., 1420.
- Rhizobium meliloti** and *trifolii*, in soils, B., 691.
- Rhizoctonia solani**, physiology of, A., 898.
- Rhizopus japonicus**, formation of lactic acid by, A., 1166.
- Rhodamines**, preparation of, from ethyl-*o*-toluidine, and their esters, A., 206.
production of, (P.), B., 940.
- Rhodamine-G**, esters, antiseptic properties of, A., 257.
- Rhodamine dyes**, manufacture of, (P.), B., 219.
production of intermediates for, (P.), B., 940.
- Rhodanic acid**, use of, in determination of *l*-proline, A., 1139.
- α -Rhodeohexonic acid**, derivatives of, A., 328.
- Rhodeus amarus**. See *Carp*.
- Rhodinol** from rose oil, constitution of, A., 1107.
in Bulgarian rose oil, B., 45.
- Rhodinols**, isomeric, Raman spectra of, A., 865.
- Rhodinyl chloride**, A., 474.
- Rhodinylmalonic acid**, diethyl ester, A., 474.
- Rhodium**, at. wt. and isotopes of, A., 802.
isotopes of, A., 909.
nuclear moment of, A., 137.
K α -emission spectrum of, A., 1439.
electroplating with, B., 555, 809; (P.), B., 315.
temperature scale of, A., 1312.
displacement of, by hydrogen, A., 824.
stripping of articles plated with, (P.), B., 157.
- Rhodium alloys** with copper, A., 440.
with platinum, A., 440.
- Rhodium bases** :—
Rhodium hydroxopentammines, A., 946.
- Rhodium compounds** with ammonia, acetonitrile, or thiocarbamide, A., 461.
complex, magnetism of, A., 573.
- Rhodichlorides**, thermal decomposition of, A., 447.
- Rhodococcus roseus**, red pigment of, A., 899.
- Rhododendrons**, control of white fly on, B., 691.
- Rhodoxanthin**, transformation of, into zeaxanthin, A., 754.
- Rhoduline**, luminescence spectrum of solid solutions of, A., 1190.
- Rhubarb**, seasonal changes in acidity of, A., 1547.
feeding of goats, hens, rabbits, and sheep, with leaves of, B., 972.
juice, antiscorbutic action of, A., 546.
cultivated, B., 566.
- Rhus pentaphylla** from Sicily, B., 819.
- Rhus succedanea**, constitution of wood of, A., 757.
- Rhus toxicodendron**. See *Ivy*, poison.
- 9-d-1'-Ribitylsalloxazine**, and its tetraacetate, A., 1510.
- 5-d-1'-Ribitylamino-*o*-xylene**, 4-nitro-, A., 1382.
- Ribodosecytidylic acid**, and its barium salt, A., 510.
- d-Riboflavin**, synthetic, growth-promoting action of, A., 1286.
- l-Ribo- γ -ketoheptonolactone**. See *Lallo-Ascorbic acid*.
- Ribose nucleotides**, partial synthesis of, A., 1481.
- d-Ribose**, preparation of, crystalline, A., 477.
- Ricciocarpus natans**, effect of pantothenic acid on growth of, A., 1548.
- Rice**, chemistry of formation and germination of, A., 548.
treatment of, (P.), B., 285.
boiling of, and colloid chemistry of rice starch, B., 697.
effect of parboiling of, on milling quality, B., 825.
preservation of, (P.), B., 747.
control of weevils in, B., 250, 331.
storage of, B., 377.
in tin containers with calcium chloride, B., 1065.
fumigation of, in store in Louisiana, B., 250.
- Rhizoctonia** (sheath blight) of, B., 822.
control of seed-borne diseases of, B., 691.
amylosynthase of, A., 1162.
anti-anaemia principle in polishings of, A., 885.
glutinous, vitamin-B, content of, A., 792.
hulled, storage of, in carbon dioxide, B., 171.
in straw bags, B., 171.
- Philippine, distribution of nitrogen and carbohydrates in bran from, B., 1115.
polished, effect of feeding of, with edible tubers, A., 114.
toxic substance from, A., 1175.
detection of, in wheat flour, B., 1113.
determination of, in linseed cakes, B., 922.
- Rice bran**, feeding value of, for growing pigs, B., 827.
- Rice-bran extracts**, effect of, on growth of organisms, A., 1419.
- Rice germ oil**, vitamin-E activity of, A., 1177.
- Rice plants**, plots for field trials with, B., 646.
influence of soil fertilisers on growth of, and composition of its leaves, B., 566.
effect of nitrogen on growth and nitrogen content of, B., 325.
failure of second year planting of, in Kuban, B., 37.
aerobic and anaerobic respiration of, in connexion with carbon dioxide-carbohydrate ratio, A., 548.
distribution of copper in, cultivated in soils containing copper, A., 552.
paddy, absorption of nitrogen, phosphoric acid, and potassium by, B., 117.
- Rice starch**. See under *Starch*.
- Rice straw**. See under *Straw*.
- Ricin**, differentiation of, from ricinallergen, A., 267.
- Ricinallergen**, A., 267.
- Ricinoleic acid**. See *Ricinoleic acid*.
- Ricinine**, synthesis of, A., 97.
- Ricinoleamide**, rotatory power of, A., 851, 1486.
- Ricinoleic acid**, synthesis of, and its methyl ester, A., 474.
purification of, (P.), B., 160.
sodium salt, action of, on micro-organisms, A., 665.
esters, pyrolysis of, A., 845.
- Ricinus**. See *Beans*, castor.
- Rickets** from hypervitaminosis-D, A., 418.
and spasmophilia, A., 1011.
control of, A., 1149.
calcium in blood in, A., 385.
blood-iodine in, A., 518.
glycolysis in tissues in, A., 386.
haemoglobin in blood of chickens with, A., 1517.
influence of magnesium salts on, A., 651.
methylglyoxal in tissues in, A., 776.
plasma-phosphatase in, A., 1279.
serum-phosphatase in, A., 1149.

- Rickets**, effect of phosphates on bone in, A., 670.
 effect of phosphorus on, A., 650.
 phosphorus in blood in, A., 1393.
 effect of, on structure of bone, A., 238.
 viosterol in prophylaxis of, A., 386.
 correction of, by direct administration of vitamin-D, A., 379.
 in chicks, anti-factor for, A., 261.
 effect of seasonal variation and sex on, A., 417.
 egg-yolk and chicken-fat as preventives of, A., 1403.
 influence of protein levels and calcium and phosphorus balance in, A., 1403.
 effect of hen's diet on bone changes in, A., 1270.
 in rabbits, A., 1403.
 in rats, spontaneous calcification of bone in, A., 776.
 bone-phosphorus-nitrogen ratio in, A., 776.
 lipase of tissues of, A., 403.
 beryllium, administration of calciferol in, A., 518.
 human, blood-iodine in, A., 1011.
 incurable, A., 518.
 late, with chronic nephritis and diabetes, A., 888.
 renal, A., 1011.
- Rinderpest**, variation in serum-proteins in, A., 888.
- Rings**, formation of, and polymerisation, A., 844.
 reactions involving closure of, A., 84, 203.
 fused, A., 1239.
 meta- and para-, A., 844.
 multiplanar, optical activity connected with, A., 1239.
 six-membered, single and double, mathematical analysis of, A., 15.
- Roads**, construction of, (P.), B., 189.
 materials for, (P.), B., 1045.
 plant for manufacture of, (P.), B., 1097.
 drying of, (P.), B., 210.
 asphalt emulsions for, B., 438.
 bituminous materials for, (P.), B., 727, 758.
 light-coloured bituminous materials for, (P.), B., 1144.
 fillers in, B., 497.
 particle size of fillers for, B., 497.
 viscosity of bitumens for, B., 1028.
 examination of bituminous emulsions for, A., 1340.
 cement for, B., 1143.
 hydraulic cement for, (P.), B., 675.
 concrete for, B., 675.
 tars for. See Tar, road.
 treatment of coal tar for, B., 1028.
 manufacture of tar products for, (P.), B., 1083.
 surfaces for, (P.), B., 903.
 treatment of, (P.), B., 456, 994.
 surfacing material for, (P.), B., 770, 806, 853.
 asphalt-concrete surfacing of, B., 592.
 binding material for surfaces of, (P.), B., 675.
 bitumen-tar mixtures for, (P.), B., 662.
 bituminous preparations for, (P.), B., 260.
 bituminous surfaces for, (P.), B., 675.
 covering materials for, (P.), B., 497.
 index of roughness of surfaces of, B., 189.
 adhesion between minerals and bituminous materials in, B., 675.
- Roads**, effect of oils and tars from, on water supplies, B., 480.
 luminous paint for, B., 598.
 Californian, surfaces of, B., 852.
 macadam, construction of, (P.), B., 409.
- Roasting apparatus**, (P.), B., 753.
- Rochelle salt**, A., 288.
 properties of, A., 14.
 infra-red absorption spectrum of crystals of, A., 1445.
 similarity of electrical properties of potassium dihydrogen phosphate and, A., 1452.
 dielectric anomalies of, A., 1452.
 dielectric constant of, in an electric field, A., 809.
 magnetic properties of, A., 1312.
 crystal structure of, A., 18.
 crystals, preparation of, with reproducible measurements, A., 813.
 time of relaxation in, A., 288.
 polarisation of, A., 1310.
 Curie point for, A., 922.
 Weiss law for, A., 12.
 dilatations in, A., 1195.
- Rocks**, generative metamorphism of folds in, A., 1102.
 effect of mud on electrical profiles of rocks, A., 1347.
 sizing and crushing machines for, (P.), B., 786.
 dielectric constant and specific resistance of, A., 1344.
 organic substances in, A., 322.
 weathering of, A., 1220.
 in Siam, A., 1220.
 of Amulet mine, Noranda district, Quebec, A., 1346.
 bituminous, extraction of asphalt from, (P.), B., 180.
 carboniferous, A., 1346.
 of the Eastern Alps, structure and arsenic content of, A., 61.
 Egyptian igneous and metamorphic, analysis of, A., 323.
 eruptive, orientation of mica microliths in plagioclases from, A., 1479.
 induced remanent magnetism of, A., 468.
 of Kabylie de Collo, A., 843.
 Finnish, composition of, A., 1479.
 heavy minerals in, A., 1100.
 fused, viscosity and plasticity of, A., 820; B., 1049.
 Glenarm metamorphic, of S.E. Pennsylvania, age of, A., 1344.
 granitoid, African, A., 1101.
 of Gwalior trap, Gwalior, India, A., 468.
 igneous, rare elements in, A., 841.
 of Bilbao, A., 1347.
 Newry, A., 1100.
 of Kaldurga, Mysore, A., 1479.
 magmatic, A., 322.
 nickel intrusive, of Ontario, "offset dikes" of, A., 1344.
 potash-rich, origin of, A., 601, 1099.
 pseudoleucitic and epileucitic, of Siberia, A., 60.
 of Raasay, Inner Hebrides, A., 1479.
 of St. Kilda, A., 1479.
 sedimentary, separation of argillaceous fraction of, A., 323.
 indurated, mechanical analysis of, A., 1344.
 of Virginia mining district, New Mexico, A., 1479.
 volcanic, pyromorphism of inclusions in, A., 323.
 weathering of, A., 1347.
 analysis of, A., 1215.
- Rocks**, of White Mountain, magma series, evolution of, A., 1345.
 analysis of gases in, A., 52.
 determination in, of carbon, A., 53.
 of copper, A., 597.
 of molybdenum, potentiometrically, B., 677.
 of radium, A., 54.
 of zirconium, A., 1339.
- Rock salt**, X-ray reflexion and structure of, A., 151.
 elastic limit of, A., 1311.
 effect of photochemical coloration on elastic limit and strength of crystals of, A., 1452.
 elastic moduli of, A., 154.
 plasticity of crystals of, A., 435.
 plastic deformation of, A., 1311.
 diffraction of fast electrons by, A., 1399.
 action of β - and γ -rays on, A., 273.
 electrical breakdown of, on exposure to light after irradiation with X-rays, A., 288.
 electrical strength of, A., 1311.
 absorption of cosmic rays by, A., 8.
 mobility of copper ions in, A., 39.
 crystal structure of, A., 814.
 transference of electrons from sodium in, A., 566.
 formation and decomposition of colloidal sodium in, A., 311.
 thermal expansion of sodium chloride and, A., 436.
 translation mechanism of crystals of, A., 288.
 coloured, crystal photo-effect with, A., 282, 566.
 synthetic, absorption spectrum of, A., 19.
 photochemical properties of crystals of, A., 19.
 See also Sodium chloride.
- Rodents**, control of, B., 248.
 red squill extract for poisoning of, (P.), B., 528.
- Roofs**, production of granules for, (P.), B., 25, 548.
 production of coloured silicate granules for, (P.), B., 1144.
 weather-resistance of slate for, B., 547.
 old, radioactivity of material from, A., 558.
 waterproof, manufacture of, (P.), B., 806.
- Roofing materials**, (P.), B., 409.
- Rooms**, disinfection of, with formaldehyde, B., 832.
 closed, purification of air in, (P.), B., 480.
 treatment of air in, during gas attacks, B., 207.
- Roots**, growth substances for, A., 672.
 induced formation of, by growth-substance paste, A., 1038.
 growth substance inhibiting growth of, A., 548.
 absorption by, in relation to concentration of culture media, A., 264.
 assimilation by, A., 548.
 respiration of, A., 794.
 effect of beryllium, palladium, and zirconium salts on geotropic sensitivity of, A., 264.
- Rosa rugosa*, pigment of fruits of, A., 1290.
- Rosaniline**, condensation of, with 1-chloro-2,4-dinitrobenzene, A., 81.
- Rose mallow**, oil from, A., 797.
- Rose oil**, rhodiol from, A., 1107.
 Bulgarian, B., 45.
- Rosin**. See Colophony.
- Rotation**, dipole, in amorphous solids, A., 685.
 free, and Raman effect, A., 1190.
 optical, origin of, A., 1056.
 and chemical constitution, A., 488.

Rotation, synchronised, in *o*-phenyldi-phenyls, A., 214.
Rotenone, A., 83, 92.
 and its derivatives, synthesis of, A., 868, 1130.
 derivatives, constitution and toxicity of, A., 1275.
 stability of, in commercial preparations, B., 1117.
 insecticidal use of, B., 919.
 efficiency of plants containing, B., 1013.
 determination of, by modified Roark method, B., 1023.
 by oxidation in alkaline medium, A., 228.
 in derris root, etc., B., 380, 573, 606, 973.
Rubber, constitution of, and nature of its viscous solutions, B., 240.
 chemical constitution of, B., 512.
 structure of, A., 153; B., 113.
 structure and elastic stretching of, B., 196.
 tear-resistance and structure of, B., 369.
 production of, B., 1104; (P.), B., 776, 862.
 thixotropy and plasticity in, B., 962.
 from latex, (P.), B., 1104.
 treatment of, (P.), B., 241.
 with hypochlorites, (P.), B., 962.
 compounding of, (P.), B., 196, 280, 1105.
 fatty acid softeners in, B., 685.
 with higher alcohols, B., 279.
 mixing of, with tar products, B., 790.
 filler for, from cellulose, (P.), B., 1090.
 mastication of, B., 468.
 milling of, with soya-bean lecithin, B., 113.
 plasticisers for, (P.), B., 1006.
 parallel-plate plastimeter for, B., 685.
 vulcanisation of, A., 1349; (P.), B., 35, 70, 280, 322, 513, 776, 1104.
 graphic comparison of methods of, B., 600.
 accelerators for, B., 113; (P.), B., 92, 163, 241, 280, 322, 370, 468, 738, 840, 1006, 1104, 1105, 1155.
 for cables, B., 369.
 use of organic accelerators for, B., 962.
 accelerators and retarders for, (P.), B., 35.
 use of mixed accelerators for, B., 512.
 ultra-accelerators for, (P.), B., 280.
 zinc sulphate ammine accelerators for, B., 112.
 optimum conditions for, B., 279.
 restraining of, B., 467.
 thermochemistry of, B., 600.
 colloidal changes in, B., 643.
 control of, by X-ray analysis, B., 418.
 effect of carbon black on, B., 685.
 determination of sulphur chloride in baths for, B., 816.
 with tetramethylthiuram sulphides, B., 600.
 influence of gases on hot vulcanisation of, B., 70.
 vulcanisation of moulding soles of, B., 1006.
 manufacture of antioxidants and vulcanisation accelerators for, in Italy, B., 512.
 properties of, at low temperatures, B., 162.
 testing of hardness of, B., 1058.
 Williams abrasion testing machine for, B., 1104.
 plasticity of, B., 113.
 plastic and elastic properties of, B., 70, 418.
 elasticity of, B., 563.

Rubber, elasticity of, theory of, B., 643.
 visco-elastic properties of, B., 321.
 apparatus for measurement of break-down properties of, B., 369.
 refractive index of, B., 775.
 Raman spectrum of, A., 1054.
 dipole moment of, A., 163.
 and its compounds with sulphur, heats of combustion of, B., 240.
 heats of reaction of, with sulphur, B., 642.
 density of, in latex, B., 512.
 dissolving of, for paints, varnishes, and insulating materials, (P.), B., 916.
 particle form in colloidal solutions of, A., 163.
 increasing resistance of, to solvents, (P.), B., 370.
 conversion of heat energy into work with, B., 240.
 chemical technology of, B., 368.
 chlorination of, B., 512.
 hydrogenation-cracking of, B., 563.
 oxidation of, by hydrogen peroxide, B., 512.
 antioxidants for, B., 563; (P.), B., 35, 241, 262, 280, 776, 841, 962.
 depolymerisation of, (P.), B., 776.
 action of cellulose nitrate solutions on, B., 417.
 dielectric constant, power factor, and conductivity of compounds of sulphur and, B., 915.
 specific volume, compressibility, and thermal expansion of compounds of sulphur and, B., 775.
 coating of, with lacquers, etc., (P.), B., 278.
 with silver, etc., (P.), B., 1000.
 composition for, (P.), B., 241.
 protective coating for, (P.), B., 738.
 protective coatings for insulating coverings of, (P.), B., 684.
 colouring of, (P.), B., 196.
 in bulk, B., 563.
 pigments for, (P.), B., 797.
 influence of pigments in, B., 510.
 surface-energy relationships between pigments and, B., 368.
 azo-dyes for, (P.), B., 397.
 dispersion of channel gas black in, B., 643.
 coating with, (P.), B., 1104.
 of iron articles, (P.), B., 1052.
 of metal sheets, (P.), B., 1148.
 of rayon yarns and fabrics, B., 1140.
 non-permeable coatings of, (P.), B., 562.
 coating compositions from, (P.), B., 511, 1056.
 production of compositions of, with asphalt or bitumen, (P.), B., 1083.
 reinforcement of, with calcene, B., 113.
 cements for leather and, B., 862.
 fireproofing of, B., 737; (P.), B., 962.
 preservation of, (P.), B., 600, 643, 817, 962, 1058, 1105.
 preservatives for, (P.), B., 370.
 ageing of, in the atmosphere, B., 737.
 artificial ageing of, B., 369.
 effect of antioxidants on natural and accelerated ageing of, B., 862.
 anti-agers for, (P.), B., 197, 280, 370, 738.
 perishing of, in the atmosphere, B., 162.
 reclamation of, (P.), B., 322, 1006.
 regeneration of, B., 600; (P.), B., 738.
 oil-resistance of, B., 915.
 uses of, B., 468.
 joining of, to other surfaces, (P.), B., 35.
 joining of materials with, (P.), B., 370.

Rubber, bonding of abrasive articles with, (P.), B., 101.
 bonding of, to artificial silk, (P.), B., 989.
 to metal and other surfaces, (P.), B., 738.
 control in proofing with, B., 685.
 accumulator plates covered with, (P.), B., 68.
 adhesives from, (P.), B., 115, 163, 686, 739.
 adhesives for metals and, (P.), B., 917.
 yarns of asbestos and, for friction materials, (P.), B., 1078.
 use of, in manufacture of beverages and foods, B., 563.
 manufacture of cellular thermal insulating materials from, (P.), B., 386.
 manufacture of coloured extruded products of, (P.), B., 320.
 electrical insulating materials containing, (P.), B., 30.
 proofing of fabrics with, B., 369.
 antioxidants for application of, to fabrics, B., 1003.
 impregnation of fibrous materials with, (P.), B., 1041.
 manufacture of films and threads of, B., 70.
 production of drying oil and varnish gum from, (P.), B., 1155.
 manufacture of reaction product of hydrogen halides and, (P.), B., 962.
 use of, in lubricants, B., 791.
 manufacture of building mortar containing, (P.), B., 994.
 production of moulding powder of, (P.), B., 776.
 application of, to paper fibres, B., 143.
 use of, in paints, B., 814, 959.
 plastics from, B., 1055.
 manufacture of plastic masses from, (P.), B., 368.
 production of plastic material from, (P.), B., 113.
 resins from, A., 134.
 production of surfacing material from, (P.), B., 468.
 thermoplastic compositions from, (P.), B., 961.
 waterproofing composition from, (P.), B., 322.
 production of crinkled surface on, (P.), B., 1006.
 formation of, in plants, A., 796.
 function of hydrocarbon of, in living plant, B., 968.
 microchemical analysis of, B., 240.
 determination in, of free sulphur, B., 512.
 iodometrically, B., 34.
 iodometrically and with permanganate, B., 162.
Rubber, abrasion-resisting, production of, (P.), B., 1155.
 cellular, manufacture of, (P.), B., 113.
 manufacture of goods of, (P.), B., 279.
 cellular and porous, manufacture of, from latex, (P.), B., 817.
 chlorinated, B., 241, 418, 685, 861, 916.
 production of, (P.), B., 197, 280, 370, 468, 776, 963, 1007, 1105.
 uses of, B., 775.
 binding agent for paints and lacquers containing, (P.), B., 1056.
 durability of paints containing, B., 1004.
 products from, (P.), B., 1105.
 manufacture of products of, (P.), B., 70.

Rubber, chlorinated, manufacture of cellular constructional materials from, (P.), B., 770.
 coating compositions containing, (P.), B., 195, 278.
 floor coverings from, (P.), B., 368.
 production of films of, (P.), B., 963.
 film-forming compositions from, (P.), B., 735.
 use of, as anticorrosive material, B., 468.
 properties and uses of, in textile industry, B., 34.
 stability of, B., 369.
 stabilisation of, (P.), B., 13.
 stabilised, manufacture of, (P.), B., 738.
 cold-cured, detection of vulcanised and unvulcanised parts in, B., 468.
 crêpe, use of *p*-nitrophenol in manufacture of, B., 512.
 for shoe soles, B., 241.
 crude, mastication of, (P.), B., 369.
 in *Cryptostegia*, B., 778.
 fireproof, manufacture of, (P.), B., 114.
 hard, production of powder of, (P.), B., 418.
 microporous, manufacture of, (P.), B., 322.
 modified, B., 643, 861.
 oil-resisting, B., 34, 279, 1154.
 plantation, manganese salts in, B., 418.
 raw, acetone extraction of, B., 861, 915, 1057.
 softening of, (P.), B., 1104.
 quality of, B., 1104.
 deterioration of, by manganese, B., 1057.
 regenerated, analysis of, B., 685.
 scrap, decomposition and devulcanisation of, (P.), B., 370.
 soft, manufacture of, (P.), B., 468.
 determination of elasticity of, B., 1006.
 influence of insulating materials on conductivity of, B., 113.
 sponge, manufacture of, (P.), B., 113, 369.
 from carbon from sunflower seeds, B., 861.
 sprayed, B., 737.
 stretched, crystals and melt in, A., 1308.
 synthetic, manufacture of, (P.), B., 195, 280, 644, 1155.
 by polymerisation of dienes, (P.), B., 163.
 in the U.S.S.R., B., 321, 861.
 anti-agers for, (P.), B., 738.
 mixtures of asphalt and, for cable insulation, B., 773.
 finishes for fabrics from, B., 1041.
 zinc oxide, kaolin, etc., as fillers for, B., 861.
 unvulcanised, compression tests on plasticity of, B., 512.
 plasticity and elasticity of, B., 599.
 vulcanised, deodorisation of, B., 34.
 influence of fillers on, B., 512.
 porosity in, B., 1057.
 swelling of, B., 915.
 discoloration and transparency in, B., 467.
 discoloration of cellulose materials in contact with, B., 738.
 soft, photo-elastic properties of, B., 321.
 determination in, of free sulphur, by modified Vollhard's method, B., 162.
 waste, containing fibrous material, plasticising of, (P.), B., 1105.

Rubber articles, manufacture of, (P.), B., 113, 1006, 1104.
 from aqueous dispersions, (P.), B., 369.
 from latex, (P.), B., 196, 322, 643, 962.
 vulcanisation of, apparatus for, (P.), B., 777.
 cleaning of moulds for, (P.), B., 114.
 production of crinkled surface on, (P.), B., 1006.
 hollow, gas-producing materials for inflation of, (P.), B., 163.
 latex, drying of, (P.), B., 241.
 mouldable, decoration of, (P.), B., 113.
 vulcanised, coating of, (P.), B., 563.
 Rubber cements, manufacture of, (P.), B., 114.
 preservation of articles coated with, (P.), B., 114.
 Rubber compositions, (P.), B., 279, 369, 1006.
 manufacture of, from latex, etc., (P.), B., 600.
 thermal properties of, B., 599.
 for artificial leather, (P.), B., 1006.
 for electrical insulation, (P.), B., 644.
 for insulation of marine cables, (P.), B., 776.
 bituminous, (P.), B., 111.
 oil-resistant, (P.), B., 644.
 soft, production of, (P.), B., 1006.
 Rubber compounds, manufacture of, (P.), B., 34.
 scorched, treatment of, (P.), B., 241.
 Rubber dispersions, production of, (P.), B., 418.
 treatment of fabrics with, (P.), B., 354.
 impregnation of textile materials with, (P.), B., 801.
 with asphalt, (P.), B., 962.
 aqueous, manufacture of, (P.), B., 197.
 concentration of, (P.), B., 686*.
 spreading of, (P.), B., 279.
 Rubber emulsions, manufacture of, (P.), B., 369.
 Rubber films, manufacture of, (P.), B., 196.
 Rubber flooring. See under Floors.
 Rubber goods, manufacture of, (P.), B., 35, 512.
 from latex, (P.), B., 322.
 improving tear resistance and gas-impermeability of, (P.), B., 512.
 vulcanisation of, (P.), B., 776.
 cellular, manufacture of, (P.), B., 369, 817.
 coloured, discoloration of paper and wood in contact with, B., 512.
 marbled, manufacture of, (P.), B., 916.
 Rubber hydrocarbons, vulcanisation and stress-strain behaviour of, B., 196.
 ether-insoluble, B., 196.
 Rubber industry, recovery of solvents in, B., 1058.
 hazards in, B., 1058.
 fire hazards in, B., 1058.
 Rubber latex, treatment of, (P.), B., 512, 563, 1154.
 purification and concentration of, (P.), B., 776.
 concentration of, (P.), B., 685, 738, 776, 1006, 1058, 1104.
 brass-wire gauze for straining of, B., 1057.
 thickening of, (P.), B., 321.
 anti-coagulant and preservative for, (P.), B., 962.
 prevention of discoloration of, (P.), B., 1058.
 determination of colour of, B., 961.
 stabilisation of, (P.), B., 468, 1006.
 physico-chemical properties of, B., 563.

Rubber latex, colloidal properties of, B., 240.
 effect of, on viscose, B., 16.
 uses of, B., 1057.
 in textile finishing, B., 897.
 adhesives from, (P.), B., 468.
 coating with, of fabrics, (P.), B., 267.
 of fabrics, leather, etc., (P.), B., 738.
 of fruit and vegetables, (P.), B., 39.
 production of moisture- and air-proof coatings from, (P.), B., 1056.
 coating and impregnation of textiles with, B., 945.
 treatment of textile yarns and threads with, (P.), B., 1140.
 insulation of wires with, B., 954.
 composition from, (P.), B., 862.
 tensile properties of products from, B., 162.
 product from leather and, (P.), B., 738.
 production of boots and shoes from, B., 961.
 production of coloured elastic yarns, threads, etc., from, (P.), B., 279.
 manufacture of thread from, (P.), B., 962.
 bacterial decomposition of rubber in, B., 1005.
 alkaline, coagulation of, B., 162.
 preserved, density of, B., 512.
 vulcanised, clarification of, (P.), B., 1105.
 Rubber materials, manufacture of, from dispersions and latex, (P.), B., 776.
 for paving, floors, etc., (P.), B., 150.
 Rubber mixtures, manufacture of, (P.), B., 1006.
 fillers for, (P.), B., 860.
 softeners for, B., 467.
 use of glue in, B., 113.
 use of kaolin in, B., 467.
 with road-tar, (P.), B., 644.
 use of Veimarn (Leningrad district) slate tar as softener in, B., 861.
 with phenolic resins, for moulding, B., 1152.
 Rubber products, manufacture of, (P.), B., 370.
 from dispersions, (P.), B., 738.
 from latex, (P.), B., 817.
 coloured, production of, (P.), B., 862, 1155.
 Rubber sheets, drying and smoking of, (P.), B., 512.
 smoked, external electro-viscous effect in benzene solutions of, A., 444.
 Rubber soles. See under Soles.
 Rubber solutions, manufacture of, (P.), B., 738, 1104.
 crystallisation of sulphur from, B., 196.
 oxidation of, with oxygen, B., 643.
 impregnation of hides, skins, leather, fibrous materials, etc., with, (P.), B., 371.
 Rubber strips, manufacture of, (P.), B., 1104.
 Rubber substitutes, production of, (P.), B., 642.
 "Thiokol," B., 1006.
 Rubber threads, production of, (P.), B., 280, 776, 817, 862, 1104, 1155.
 from latex, (P.), B., 962.
 Rubbone, B., 600, 1055.
 Rubene, preparation of coloured hydrocarbons of type of, A., 612, 616, 862.
Rubiaceæ, *ipecauanha* alkaloids in, B., 477.
 Rubidium, atomic wave function of, A., 1187.
 isotopes of, A., 140, 909.
 spectrum of, in mercury arc, A., 1292.

- Rubidium**, effect of an electric field on absorption spectrum of, A., 799.
Ka-emission spectrum of, A., 1439.
 radioactivity of, A., 558, 677, 1440.
 half-life of, A., 1185.
 vapour, anomalous dispersion in, A., 684.
 crystal structure of, A., 1450.
- Rubidium alloys** with potassium, A., 693.
- Rubidium bromide**, crystal structure of, A., 19.
 chloride, paramagnetism of, A., 289.
 rhenium chloride, A., 946.
 fluoroborates, crystal structure of, A., 1450.
 iodide, conductivity of, in molten iodine, A., 584.
 praseodymium sulphate, A., 180.
- Rubidium organic compounds** with pyridine, A., 868.
- Rubidium detection**—
 detection of, with dipicrylamine, A., 1472.
 spectroscopically, in mineral waters, A., 463.
- Rubrene**, constitution of, A., 335.
 and its dissociable peroxide, A., 205.
 absorption spectrum of, A., 680.
 fluorescence spectrum of, A., 429, 1052.
 photochemical constants of, in various solvents, A., 713.
 and its oxide, magnetic susceptibility of, A., 689.
- Ruby**, optical properties of, A., 725.
 natural, rôle of iron in colour of, A., 61.
- Rum**, acid and ester values of, B., 77.
 illicit, detection of, B., 1065.
- Ruminants**, feeding value of sweet-lupin seed for, B., 875.
 digestion of roughage-free rations by, B., 922.
 digestibility studies with, B., 699.
- Ruppia maritima**, salt-tolerance of, in lakes with high magnesium sulphate content, A., 1547.
- Russia**, sanitation in cities in, B., 527.
- Rust**, constitution of, B., 311.
 composition for prevention of, (P.), B., 155.
 paints for prevention of, B., 239, 464.
 priming paints for inhibition of, B., 31.
 material for removal of, (P.), B., 815.
 removal of, from cloth, etc., (P.), B., 755.
 from linen, etc., (P.), B., 186.
 electrical conductivity of, A., 1303.
 See also under Corrosion and Iron.
- Rust**, on cereals. See under Cereals.
 on cultivated plants, control of, (P.), B., 823.
- Ruthenium**, artificial radioactivity of, bombarded with neutrons, A., 1050.
- Ruthenium compounds**, alkali tetrahalogeno-, A., 594.
 co-ordinated, A., 716.
 colour reactions of, with sulphur organic compounds, A., 332.
- Ruthenium chloride**, effect of calcium chloride on absorption spectrum of, A., 1051.
- Rutinose**, constitution and synthesis of, A., 1109.
- Rye**, aleurone layer of, B., 745.
 effect of nitrogen in, on its decomposition in soils, B., 1110.
 hydrolysis of phytin compounds from embryos of, A., 134.
 sulphuric acid requirement in mashing of, B., 569.
 reddening of, by acids, B., 746.
- Rye flour**, influence of age on gelatinisation of, B., 1018.
 rôle of lactic acid in conversion of proteins of, B., 330.
 testing of, B., 1114.
 detection in, of wheat flour, B., 425.
- S.
- Saccharic acid**, calcium salts, B., 870.
 amides, preparation of, A., 72.
- Saccharides**, manufacture of resinous moulding compositions from, (P.), B., 70.
- Saccharin solutions**, effect of temperature on electrical conductivity of, A., 1078.
 action of anilines on, A., 634.
 oxime, pyrolysis of, A., 763.
 micro-analysis of, B., 261.
- ψ -Saccharinamine**, acetyl derivative, A., 763.
- Saccharinic acid**, acetyl-*p*-tolyl-, phenyl-, phenyldimethyl-, phenylmethyl-, and tolyl-ammonium salts, A., 634.
- Saccharomyces**. See Yeast.
- Saccharomyces péka**, fermentation by, A., 1418.
- Saccharosonic acids**, and their salts, manufacture of, (P.), B., 829.
- Safflower**, cultivation of, in America, B., 472.
- Safrole derivatives**, reactivity and Raman spectra of, A., 1446.
- isoSafrole derivatives**, A., 972.
- Sage**, oil content of, B., 1068.
- Saggers**, talc and dunite mixtures for, B., 803.
- Sagger bodies**, B., 271.
- Sago palm**, A., 673.
- Sahlinite**, A., 1100.
- Salamanders**, calcification diet factors for larvæ of, A., 1036.
 eggs of. See under Eggs.
 effect of avian pituitary in, A., 412.
 alpine and fire, isolation of samandarine from, A., 97.
 giant, arginase in, A., 1537.
- Salamander atra* and *maculosa***. See Salamanders, alpine and fire.
- Salazic acid**, identity of, with saxatilis acid, A., 218.
- Salazinic acid**, potassium salt, A., 83.
- Salicaceæ**, biochemistry of, A., 1042.
 glucosides of, A., 796.
- Salicin**, enzymic fission of, by emulsin in heavy water, A., 588.
 effect of sodium salicylate on fermentation of, by streptococci, A., 125.
- α -Salicin**. See Saligenin- α -*d*-glucoside.
- Salicornia herbacea***, influence of sodium chloride in nutrient media on growth of, A., 132.
- Salicoside**, A., 906.
 hydrolysis and oxidation of, by leaf enzymes, A., 1042.
- Salicylaldehyde**, condensation of, with ethyl malonate, A., 961.
 with malonic acid, A., 626.
 with *o*-phenylenediamine, A., 358.
 methyl ether, nitration of, A., 1239.
 phenylhydrazone-*p*-sulphonic acid, salts, A., 620.
 phenylhydrazon-*p*-sulphonpiperidide, A., 620.
- Salicylaldoxime**, use of, in analysis, A., 720.
 lead salt, solubility of, in water, A., 577.
- Salicylic acid**, strength of, A., 165.
 alkali salts, analgesic compositions of alkali stearates and, (P.), B., 174.
- Salicylic acid**, sodium salt, excretion of, A., 1158.
 poisoning by. See under Poisoning.
 action of, on uric acid excretion, A., 245.
 esters, 3:5-dinitrophenylurethanes, A., 207.
 6-chloro-2-hydroxydiphenyl and *o*-hydroxydiphenyl esters, A., 1233.
 methyl and benzyl esters, detection of, B., 332.
 phenyl ester (*salol*), m.p. of binary systems of, with bromural and veronal, A., 582.
 equilibrium of, with antipyrine and phenacetin, A., 970.
 determination of, in oils, B., 829.
 in tablets, B., 173.
 derivatives of, A., 342.
 and its esters, production of acyl derivatives of, (P.), B., 829.
 and its derivatives, formation of chloralides of, A., 747.
 toxicity of, and protective action of sodium citrate, A., 526.
 determination of, A., 877.
 and its salts, acidimetrically, A., 228.
 colorimetrically, A., 1259.
 determination in, of phenol, B., 664.
- Salicylic acids**, nitro-, methylation of, A., 339.
- Salicylic anhydride**, phosphate, sodium salt, A., 343.
- Salicylidene-4-aminoantipyrine**, A., 990.
- o*-Salicylideneaminophenyl disulphide**, A., 1386.
- Salicylideneaminothiophenol**, zinc salt, A., 1386.
- 5-Salicylidene creatinine**, and its picrate, A., 352.
- Salicylidenediacetophenone**, reactions of, A., 1377.
- Salicyloacetic acid**, isopropyl ester, production of, (P.), B., 974.
- Salicylocarbonic acid**, manufacture of derivatives of, (P.), B., 539.
- 2-Salicyloylamidopyridine**, and its acetyl derivative, A., 92.
- Saligenin**, A., 857.
 Saligenin, bromo-. See Bromosalizol.
- Saligenin- α -*d*-glucoside**, A., 69.
- Saligenin- α -maltoside heptaacetate**, A., 848.
- Salinigrisoflavonololide**, A., 906.
- Salipurposide**, A., 906.
- Salirepol**, A., 906.
- Saliva**, A., 1146.
 p_H and acid-neutralising power of, A., 883.
 acetylcholine in, A., 1399.
 cholesterol and lecithin in, A., 377.
 mixture of gastric juice and, A., 512.
 excretory function of, A., 378.
 cat's, absence of acetylcholine and adrenaline from, A., 1146.
 horse, decomposition of group-A substance in, by micro-organisms, A., 1420.
 human, saccharogenic power of, A., 1146.
 polypeptides in, A., 773.
 pytaline content of, A., 105.
 testing of, A., 397.
 detection in, of opium derivatives, A., 1274.
- Salivary glands**, chromosome structures in, A., 1144.
 influence of, on calcium metabolism, A., 243.
 elimination of hydrogen carbonate by, A., 512.
- Salix**, biochemistry of, A., 906.

- Salix nigricans* and *repens*, constituents of, A., 906.
- Salix purpurea*, leaf enzymes of, A., 1042.
- Salmine, combination of, with fatty acids, A., 966.
- Salmo irideus*, eggs. See under Eggs.
- catalase in embryos of, A., 1535.
- Salmon, fat of, A., 242.
- canned, production of, (P.), B., 923.
- Salmonella*, yellow pigment of, A., 899.
- decomposition of organic acid salts by, A., 899.
- Salmonella pullorum-gallinarum*, sugar fermentation by, A., 1029.
- Salol. See Salicylic acid, phenyl ester.
- Salophosphoric acid, hydrolysis of, A., 343.
- Salt, Cyprus, A., 602.
- See also Rock salt and Sodium chloride.
- Salts, accumulation of, in W. Siberia, B., 164.
- rôle of vegetation in formation of deposits of, B., 164.
- production of, (P.), B., 1092.
- using base-exchanging substances, (P.), B., 226.
- purification of, by extraction with mixed solvents, (P.), B., 403.
- electrolytic purification of, (P.), B., 1002.
- recovery of, from solution by evaporation, (P.), B., 130.
- diamagnetic susceptibilities of, A., 149.
- inner adsorption in crystals of, A., 1316.
- effect of other salts on solubility of, A., 26.
- apparent volume of, in solution and their compressibilities, A., 31.
- influence of evaporation on migration of, in solutions, A., 820.
- equilibria of, in salt baths, A., 36.
- activation by, A., 1535.
- luminescence of organic compounds of, under X-rays, A., 1302.
- alkaloidal. See Alkaloids, salts of.
- basic, A., 461.
- coloured, absorption spectra of solutions of, A., 1299.
- complex, absorption spectra of, in various solvents, A., 427.
- interchange of hydrogen atoms between water and, A., 458.
- determination in, of metals, A., 319.
- crystalline. See Crystalline salts.
- fused, Raman spectra of, A., 681.
- specific volume of, at high temperatures, A., 1313.
- viscosity of, A., 1313.
- equilibrium diagrams for, A., 303.
- inner-complex, A., 685.
- long-chain, anomalous solubility of, A., 299.
- mineral thermodynamics of solutions of, during crystallisation and evaporation, A., 1203.
- neutral, action of, in non-aqueous solutions, A., 1461.
- effect of, on enzymic activity, A., 1162.
- paramagnetic. See under Paramagnetic.
- determination in, of chlorides, A., 1336.
- See also Metallic salts.
- Salt hydrates, kinetics of dissociation of, A., 588.
- dissociation pressures of, A., 302.
- unstable, vapour pressure and dehydration of, A., 934.
- Salt solutions, concentration of, (P.), B., 673.
- treatment of, (P.), B., 1092.
- heat of isothermal evaporation of, A., 1324.
- determination of solubility, density, viscosity, and conductivity of, A., 321.
- Salt solutions, tonometry of, A., 579, 825.
- toxicity of, A., 1534.
- anti-coagulant, f.p. of, A., 579.
- mixed, mixed crystals and equilibrium in, A., 292.
- Salting-out, superficial, by electrolytes, A., 1317.
- Salvarsan, arsenoxide in relation to toxicity of, A., 531.
- passage of arsenic through placenta after treatment with, A., 531.
- non-toxic p_H indicator for, (P.), B., 124.
- Salves, cosmetic, production of, (P.), B., 288.
- Salvia miltiorrhiza*, composition of, A., 754.
- Salyrgan, diuretics from administration of, A., 1019.
- influence of, in tissue cultures, A., 1413.
- Samambain, A., 1550.
- Samandarine, isolation of, from *Salamander atra* and *maculosa*, and its derivatives, A., 97.
- Samandarone, and its derivatives, A., 98.
- Samandesol, A., 98.
- Samandesolic acid, A., 98.
- Samandesone, and its derivatives, A., 98.
- Samarium, isotopes of, A., 3.
- absorption spectra of, A., 144.
- arc spectrum of, A., 556.
- radioactivity of, A., 1440.
- half-life of, A., 1185.
- magnetochemical properties of, A., 14.
- Samarium chloride, effect of calcium chloride on absorption spectrum of, A., 1051.
- oxide, spectrum of vapour of, A., 1299.
- sulphate, heat capacity of, A., 574.
- octahydrate, crystal structure of, A., 571.
- sodium sulphate, A., 180.
- Samarskite, specific heat of, A., 690.
- Samples, of liquids, apparatus for taking of, (P.), B., 579.
- Sampling, B., 609.
- Sand, purification of, (P.), B., 101, 271.
- de-watering of, (P.), B., 257.
- colouring of, (P.), B., 98.
- grading of, (P.), B., 83.
- specification for, for colourless glass, B., 496.
- wet tests for fineness of, B., 851.
- for water filters, B., 480.
- black, of Pacific Coast, gold in, B., 953.
- assay of, for gold, etc., B., 412.
- hydatic, sterilisation of, A., 1031.
- ilmenite, on the Azov Sea, A., 1100.
- Kazakhstan, microflora of, B., 115.
- moulding, B., 358.
- manufacture of, (P.), B., 727.
- influence of clay and water on strength of, B., 358.
- testing of, B., 26.
- pipette method for fineness test of, B., 496.
- quartz, removal of iron from, B., 629.
- silica, removal of iron oxide from, B., 849.
- Sandal, spiko disease of, B., 472.
- Sandalwood, compounds in, A., 1372.
- red, constituents of, A., 218.
- Sandalwood seeds, oil from, B., 640.
- Sandstones, bituminous, production of illuminating gas from, B., 211.
- Sanidinities, of Laacher lake region, A., 60.
- Sanitation, in chemical works, B., 527.
- in Russia, B., 527.
- Santal, and its derivatives, A., 1372.
- β -Santalene, constitution of, A., 625.
- Santalin, compounds accompanying, in sandal wood, A., 1372.
- β -Santalol, constitution of, A., 625.
- alophanate, A., 756.
- α - and β -Santalols, A., 755.
- Santalum album*. See Sandal.
- α -Santalyl chloride, A., 755.
- β -Santalyl chloride, A., 756.
- α -Santalylacetic acid, A., 755.
- α -Santalylmalonic acid, and its potassium salt and ethyl ester, A., 755.
- β -Santalylmalonic acid, and its diethyl ester, A., 756.
- Santonie acid, structure of, and its derivatives, A., 755.
- Santonin, structure of, and its derivatives, A., 755.
- ammonolysis of, in liquid ammonia solution, A., 174.
- in Scottish *Artemisia*, B., 253.
- desmotropo-Santonin, constitution of acid from, A., 218.
- ψ -Santonin, A., 268.
- Sapamine, interfacial tension between benzene solutions of, and water, A., 29.
- Sapogenins, A., 673.
- Digitalis*, A., 1130.
- neutral, degradation of genin of, A., 1126.
- Saponification at interfaces, A., 1071.
- Saponin, influence of, on yeast, A., 1418.
- haemolysis by, A., 881.
- quillaia, detection of, colorimetrically, B., 253.
- Saponins, A., 348, 673, 754.
- chemistry of, A., 1244.
- acid hydrolysis of, A., 1503.
- neutral, A., 986, 1126.
- detection of, A., 228.
- Sarcinæ, in beer, B., 203.
- Sarcoma, production of ammonia by, A., 514.
- bird's, filterable tumour-exciting agent in, A., 514.
- Jensen, effect of insulin in, A., 1526.
- mouse, effect of heavy water on viability of, A., 381.
- utilisation of sugars and their derivatives by, A., 514.
- rat, effect of X-rays on, A., 649.
- effect of heavy water on, A., 382.
- Jensen rat, distribution of arginine in, A., 381.
- Sarcosine glucoside, sodium salt, A., 332.
- Sarcostigma Kleinii*, oil from seeds of, B., 732.
- Sarcosylglycine glucoside, A., 332.
- Sardines, tinned, lead in, B., 921.
- Sardine oil, hydrogenation of, B., 859.
- pristane in, A., 1397.
- unsaturated acids in, A., 960, 1105, 1223, 1482.
- hydrogenation of unsaturated oleic acids of, B., 912.
- attempted preparation of drying and non-drying oils without fish odour from, B., 560.
- hydrogenated, normal paraffin in, A., 1144.
- Sarsasapogenin, and its derivatives, A., 864, 1248.
- degradation of, A., 1248.
- Sarsasapogenyl chloride, A., 1248.
- Sauerkraut, vitamin-C content of, A., 417.
- Sauromalus obesus*. See Chuckwalla.
- Sausages, production of, (P.), B., 923.
- artificial casings for, (P.), B., 923.
- production of skins for, from raw hides and skins, (P.), B., 739.
- production of artificial skins for, (P.), B., 944.

- Sawdust**, hydrolysis and fermentation of, B., 1064.
preparation of vanillin from sulphite liquor and, A., 750.
- Saxatilis acid**, identity of, with salazic acid, A., 218.
- Saxidomus giganteus*, composition of crystalline style of, A., 1398.
- Saxifraga crassifolia*, industrial uses of, B., 963.
- Scale**, boiler, removal and prevention of. See under Boilers.
- Scale**, plant. See Plant scale.
- Scammonin**, constitution of, A., 87.
- Scammonolic acid**, esters, A., 87.
- Scandium**, nuclear moment of, A., 2.
- Scandium salts**, specific heat of, A., 289.
complex, A., 714.
- Scandium oxide** in spectra of cold stars, A., 1188.
- Scaphium affine*, mucilage of, A., 1180.
- Scarlatina**, acetoneuria and hepatic insufficiency in, A., 776.
- Scarlet fever**, toxins of, A., 1168.
- Schiff's bases**, enamine form of, A., 978.
effect of nitro-groups in, A., 76.
reaction products of sulphur dioxide and aldehyde derivatives of, (P.), B., 761.
aromatic, action of nitrosyl chloride and nitrosylsulphuric acid on, A., 750.
- Schizocarps**, extracted, detection of, B., 745.
- Schizophrenia**, pharmacodynamics of nervous system in, A., 1422.
- Schizophrenics**, effect of glycerol extracts of adrenal cortex on, A., 518.
elimination of folliculin in, A., 1010.
glutathione and lactic acid in blood of, A., 888.
- Schizosaccharomyces octosporus*, action of ultra-violet light on, A., 898.
- Schizothaerus nuttalli*, composition of crystalline style and gastric shield, of, A., 1398.
- Schönites**, structure of, A., 954.
- Schoepite**, A., 1479.
- Schroëckingerite**, from Bedford, New York, A., 323.
- Schwartzite**, occurrence of, in British Columbia, A., 469.
- Scilla*, glucosides from, A., 735.
- α -Scillanic acid**, identity of, with allocholanolic acid, and its methyl and *n*-propyl esters, A., 754.
- β -Scillanic acid**, and its methyl ester, A., 754.
- Scillarene-A**, hydrogenation of, and its derivatives, A., 609.
transformation products of, A., 330.
- Scillarenic acids**, and their methyl esters, A., 330.
- Scillaridin A**, formula and derivatives of, A., 1355.
- Sclerosis**, intravenous, substances causing, A., 655.
- Sclerotinia fructicola*, absorption of Bordeaux mixture residues by conidia of, B., 568.
- Scopolamine**, detection of, in presence of phenol, A., 229.
determination of, mercurimetrically, A., 999.
in brain tissue, A., 1018.
- Scorbutic index**, A., 669.
- Scorodose**, hydrolysis of, by enzymes, A., 1435.
- Scorzonera Tau-Sagiz*, flow and coagulation of latex in, A., 1431.
- Screening apparatus**, (P.), B., 338.
vibrating, B., 529.
- Screws**, steel, production of, (P.), B., 907.
- Scurvy**, adrenaline in adrenals in, A., 1403.
biochemistry of blood in, A., 518.
effect of ascorbic acid in, A., 669, 888.
ascorbic acid of tissues in, A., 1176.
ascorbic and dehydroascorbic acids in urine of, A., 1176.
chlorine and phosphorus content of brain and magnesium content of muscle in, A., 238.
nitrogen balance in, A., 888.
inorganic phosphorus in blood and urine in, A., 1270.
remedies for, from fruit and vegetables, A., 546.
experimental, A., 386, 1149.
in relation to diet, A., 386, 547.
- Scutellarin**, fission of, by baicalinase, A., 1024.
- Scyllium canicula*, calcium-phosphorus ratio in, B., 604.
- Scyllium catulus*, activity of pancreatic extracts of, with added enterokinase, A., 252.
- Scymnorhinus lichia*, liver oil from, A., 1145.
- Sea anemones**, lipochromes of, A., 1005.
- Sea-urchins**, carotenoids in, A., 1145.
eggs of. See under Eggs.
effect of temperature on osmosis in cells of, A., 1012.
- Sea water**. See under Water.
- Seals**, production of meat extract from, (P.), B., 523, 605.
- Sealskins**. See Skins, seal.
- Sealing compositions**, for cans, jars, etc., (P.), B., 961.
for metal cans, etc., (P.), B., 1026.
- Seaweeds**. See Algæ, marine.
- Sebacic acid**, diethylene glycol and polymethylene esters, A., 845.
di- β -hydroxyethyl ester, and its diacetyl derivative, A., 327.
- Sebacylpiperidine**, A., 71.
- Sebastes marinus*. See Haddocks, Norway.
- Secretin**, preparation and physiological action of, A., 1019.
effect of, on arterial and venous blood-sugar, A., 538.
on canine and human pancreas, A., 538.
chologogue action of, A., 901.
action of pepsin on, A., 788.
- Sedatives**, production of, (P.), B., 749.
antipyretic, A., 1156.
- Sediments**, argillaceous, stochastic relations in, A., 1101.
marine, decomposition of animal substances in, A., 1003.
- Sedimentation**, measurement of equilibrium of, with ultra-centrifuge, A., 444.
- Sedimentation apparatus**, (P.), B., 532, 788, 930, 977, 1026.
- Seeds**, temperature-absorption in germination of, A., 904.
stimulation of germination of, by soils, B., 689.
action of dips in stimulating germination of, B., 515.
vitamin-C in germination of, A., 1429.
effect of radioactive mud on germination and growth of, A., 795.
effect of vitamin-C on germination and growth of, A., 1430.
disinfectants for, B., 1159; (P.), B., 248, 327, 823.
cyanamide disinfectant for, (P.), B., 328.
disinfection of, with hydrogen peroxide, B., 245.
- Seeds**, coal-tar kerosene emulsions as insecticides for, B., 1012.
fungicidal pickling of, B., 375.
storage of, B., 1110.
germinating, dehydrogenating enzymes in, A., 795.
effect of deuterium oxide on respiration of, A., 552.
action of metals at a distance on, A., 1179.
oil. See Oil seeds.
of Queensland, B., 1157.
- Seedlings**. See Plants, seedling.
- Seignette salt**, anomaly of specific heat of, A., 1454.
spontaneous orientation region of, A., 572.
- Sekika-aldehyde dimethyl ether**, A., 491.
- Sekikaic acid**, synthesis of, A., 977.
dimethyl ether, A., 491.
- Sekikoic acid**, methyl ester, dimethyl ether of, synthesis of, A., 490.
- Selenates**. See under Selenium.
- Selenic acid**. See under Selenium.
- di*Selenides**, organic, disproportionation reaction of, A., 962.
- Selenite**, crystalline, in Texas, A., 725.
- Selenites**. See under Selenium.
- Selenium**, isotopes of, A., 6, 1295.
nuclear moments of, A., 424.
molecules, diatomic, effect of magnetic field on fluorescence of, A., 675.
distribution of, in nature, A., 843.
occurrence of, in soils, B., 513.
in United States soils, B., 1010.
recovery of, from copper matte, (P.), B., 227.
from electrolytic slimes, (P.), B., 506.
from ores and by-products, (P.), B., 505.
spectrum of, A., 675.
hyperfine structure in, A., 1437.
absorption band spectrum of, A., 1045.
X-ray absorption spectrum of, A., 801.
arc spectrum of, A., 136, 137, 799.
molecular band spectrum of, A., 799.
emission spectrum of, A., 799, 907.
K α -emission spectrum of, A., 1439.
effect of nitrogen on fluorescence spectrum of, A., 2.
molecular spectrum of, A., 1291.
resonance spectrum of, A., 2, 137.
crystal structure of, A., 920.
colloidal, sols, doubly-refracting, A., 296.
photophoresis of, A., 801.
effect of, in glass, B., 545.
yellow coloration of hydrochloric acid by, A., 181, 1334.
action of, on compounds with angular methyl groups, A., 968.
on cyclopentane derivatives, at high temperatures, A., 738.
loss of, in reduction of selenites by hydrazine, A., 1090.
catalytic hydrogenation by means of, A., 829.
amorphous, effect of light on solution of, in carbon disulphide, A., 1331.
powdered, diamagnetism of, A., 1063.
vitreous, crystallisation of, A., 154.
- Selenium compounds**, in copper anode sludge, B., 273.
- Selenium hexafluoride**, infra-red spectrum and force constants of, A., 680.
vapour pressure of, A., 438.
dioxide, absorption spectrum of, A., 1443.
oxidations with, A., 1231.
oxidation of organic compounds with, A., 852.

- Selenium dioxide**, reduction of, by carbon monoxide, A., 593.
- Selenic acid**, and its salts, Raman effect in, A., 11.
- Selenates**, determination of, with benzidine, A., 949.
by conductometric titration, A., 1092.
gravimetrically, A., 1337.
- Selenites**, oxidation of, by X-rays, A., 1469.
electro-reduction of, A., 456.
reduction of, by hydrazine, A., 1090.
- Selenosulphates**, photographic toning with, B., 430.
- Selenium organic compounds**, A., 716, 875, 1139, 1357.
with anthraquinone, manufacture of, (P.), B., 763.
with arsenic or antimony, (P.), B., 287.
with benzanthrone, manufacture of, (P.), B., 1134.
- Selenium bromo-*o*-benzamidophenyl tri-bromide**, *tribromonaphthyl tribromide*, 2:4:6-*tribromophenyl bromide*, 2:4-di-nitrophenyl bromide, A., 1257.
- Selenium detection**, determination, and separation:—
detection of, A., 53.
determination of, gravimetrically, with acetone solutions of sulphur dioxide, A., 718.
in biological material, A., 554.
in selenium sludge of sulphuric acid factories, B., 402.
and its separation from sulphur, A., 1336.
separation of, from other metals, A., 948.
- Selenoacetic acid**, 1-anthraquinonyl ester, A., 1258.
o- and *p*-mono- and 2:4-di-nitrophenyl esters, A., 1257.
- Selenocyanates**, determination of, conductometrically, A., 53.
- Selenocyanic acid**, (—) β -butyl ester, A., 1230.
- Selenocyanides**, determination of, in presence of cyanides, A., 718.
- Selenodipropionic acid**, relation of, to α -thiodipropionic acid, A., 962.
- Selenones**, cyclic, A., 100.
- Seleno-2³-cyclopentene 1:1-dioxides**, A., 100.
- Selvadin**, B., 123.
- Semi-acetals**, formation of, in perfumes, B., 700.
- Semicarbazides**, A., 1259.
action of, on anhydrides of dibasic acids, A., 618.
- Semicarotenone α -oxime**, A., 340.
- Semicarotenone, β -hydroxy-**, A., 611.
- Semi-conductivity**, theory of, A., 566.
- Semi-conductors**, photo-effect and emission work for, A., 682.
electrical and optical properties of, A., 566.
electrical resistance at contact of, A., 567.
- Seminal plasma**, human, constituents of, A., 1006.
properties of, A., 1399.
- Seminal vesicles**, albino rat's, effect of oestrin and male hormone on, A., 1173.
- Semiquinones**, theory of formation of, A., 308.
- Semi-rectors**, A., 1050.
- Semolina**, determination of rancidity in, B., 203.
- Senarmonite**, crystal structure of, A., 286, 571.
- Senecio**, alkaloids of, A., 365, 764, 1387.
- Senecio platyphyllus**, alkaloids of, A., 764.
- Seneciophyllene**, A., 764.
- Sensibamine**, action of, A., 1157.
- "Senso," pharmacology of**, A., 1274.
- Separators**, (P.), B., 383, 578, 882, 1075.
and pulverisers, (P.), B., 531.
for ores, etc., (P.), B., 531.
for solids, (P.), B., 929.
air, (P.), B., 83, 532, 786, 1077.
centrifugal, (P.), B., 4, 50, 84, 387, 481, 578, 787, 977, 1076.
driving of, (P.), B., 481.
regulation of feed to, (P.), B., 610.
supply of liquids to, (P.), B., 977.
for ores, etc., (P.), B., 786.
cyclone, (P.), B., 1026.
electromagnetic, (P.), B., 507.
high-pressure, (P.), B., 210.
magnetic, (P.), B., 911.
pneumatic, (P.), B., 3, 83, 610, 834.
for powdered and granular materials, (P.), B., 658.
- Sepiolites**, A., 1099.
volume and lattice variation of, with temperature, A., 726.
water content and dehydration of, A., 468.
from Ampandrandava, A., 726, 842.
- Septicæmia**, histochemistry of pigments of organisms producing, A., 256.
- Sericin**, isoelectric point of, A., 1398.
adsorption of colouring matters by, A., 1398.
colloidal behaviour of, A., 33, 165.
effects of heating and enzymes on, B., 445, 511.
degradation of, in silk by alkalis, B., 936.
resistance of, to alkali, A., 883.
resistance to oxidation of, B., 398.
- Sericite**, silicosis from, A., 386.
from Pilot Knob, Missouri, A., 955.
- Serine**, metabolism of. See under Metabolism.
- dl*-Serine**, solubility of, in water, A., 695.
l-isoSerine, synthesis of, A., 1110.
- Serpentine**, reaction in formation of, A., 468.
production of refractories from, B., 768.
derivatives, and bromo-, hydrobromide, A., 636.
- Traföss**, paragenesis of reaction aureole of, A., 61.
- isoSerpentine**, and its salts, A., 636.
- Serpentine salts**, A., 636.
- Serum**, critical temperature of, A., 880.
colloidal properties of, after contact with starch, A., 644.
gel formation in, according to species, A., 508.
flocculation of, A., 1519.
in water and in presence of melanin, A., 508.
relation of ψ -globulins to superflocculation of, in distilled water, A., 776.
reaction of, to resorcinol, A., 1519.
albumin and globulin fractions of, A., 1001.
ultrafilterability of calcium of, A., 104.
clinical significance of calcium in, A., 887.
effect of ovarian and pituitary extracts on calcium in, A., 412.
calcium and phosphorus in, with ablation of thyroid, A., 516.
cholesterol in, A., 1261.
and its cholesterolytic power, A., 103.
effect of vitamin-A on, A., 1034.
enzymes of, A., 660.
effect of opizm on, A., 660.
extraction of lipins from, by alcohol-ether mixtures, A., 1261.
- Serum**, rôle of lipins in, A., 373.
variations in magnesium in, A., 104.
vacate oxygen and oxidation quotient of, A., 1262.
polypeptides, determination of tyrosine index of, A., 374.
action of adrenaline on potassium of, A., 539.
proteins, effect of ultra-violet light on, A., 1276.
sedimentation of, in the ultracentrifuge, A., 508.
adsorption of fatty acids by, A., 373.
chemistry of, A., 256, 510.
and plasma-proteins, A., 1393.
formolised, immunological properties of, A., 1143.
rat's, effect of feeding carrots on, A., 242.
effect of protein rations on, A., 1261.
determination of, A., 374.
refractometrically, A., 230.
- Bence-Jones protein in**, A., 236.
- action of**, on fluorescence of uranine solutions, A., 12.
ageing of, A., 1142.
effect of high pressure on antigenic specificity of, A., 510.
interferometry of, A., 785.
effect of temperature on Kottmann reaction in, A., 880.
animal, flocculation of, by orthophosphoric acid, A., 644.
animal and human, forms of calcium and phosphorus in, A., 880.
determination in, of bilirubin, A., 880.
- antibacterial**, titration of, by the Raman method, A., 408.
- antigonadotropic**, A., 1395.
- antipneumococci**, production of, (P.), B., 1166.
- antispicrochætal**, anticoagulant action of glucose and sucrose on, A., 408.
- antistreptococcal**, antifibrinolytic titre of, A., 1396.
- antivenomous**, specificity of, A., 1394.
- antivibrioseptic**, preparation of, A., 1003.
- cows' milk**, seasonal variation in, B., 872.
- hæmolytic and syphilitic**, serological properties of metalloprotein complexes of, A., 231.
- heat-inactivated**, pH of, A., 230.
- human**, gelification of, by acids, A., 374.
effect of salts on flocculation of hydro-sols by, A., 236.
photometry of effect of natural waters on, A., 374.
- antibacteriophagic properties of**, A., 1170.
- antitoxin content of**, A., 644.
- bactericidal substances in**, A., 1030.
- normal and syphilitic**, formation of gels in, by lactic acid, A., 508.
determination in, of carotene and vitamin-A, A., 1427.
- immune**, production of, by injection of cholesterol, A., 1519.
viscosity and precipitation in, A., 881.
specificity of, after chemical treatment, A., 126.
- infant's**, chlorine content of, A., 509.
- mare's**, gonadotropic substances in, A., 1544.
- normal and antitoxic**, ultra-violet absorption spectra of, A., 1395.
- normal and pathological**, centrifugal analysis of, A., 879.
- pathological**, flocculation of, A., 1519.

- Serum**, pregnancy, substance antagonistic to vasopressin in, A., 1171.
 rabbit's, effect of repeated bleeding on, A., 641.
 effect of injections of phenol on antibodies of, A., 1263.
 "anti-embryonic" sensitiser in, A., 643.
 citric acid content of, in reference to diet, A., 1001.
 lipase-inhibiting action of, A., 644.
 opacification reaction in, A., 231.
 rat's, electrolytes in, A., 230.
 of vertebrates, bilirubin in, A., 103.
 determination in, of albumin and globulin, A., 508.
 of ascorbic acid, A., 1036.
 of bromine, A., 881.
 of iron, A., 1393.
 of vacuole oxygen, A., 508.
Serum-albumin. See under Albumin.
Serum-bilirubin. See under Bilirubin.
Serum globulin. See under Globulin.
Serum-vitellin. See under Vitellin.
dl-Serylglycine, and its benzenesulphonyl derivative, A., 1014.
dl-Seryl-*dl*-leucine, and its benzenesulphonyl derivative, A., 1014.
l- and *dl*-Seryl-*l*-tyrosines, A., 1014.
 Sesame meal, digestibility of lucerne hay, artichoke silage, and, B., 379.
 Sesame oil, detection of, B., 597.
 Sesquiterpenes, constitution of, by oxidative degradation, A., 983, 1376.
 Sesquiterpene series, syntheses in, A., 88, 609, 755.
Sewage, treatment of, (P.), B., 176, 384, 480, 576, 752, 928, 1072.
 apparatus for, (P.), B., 432, 608, 832.
 with activated carbon, B., 1120.
 chemicals for, B., 80.
 with ferric chloride, B., 47, 255.
 by activated-sludge process, B., 431.
 effect of daily charge of solids on, B., 926.
 at Indianapolis, A., 208.
 in Oklahoma City with chlorine, iron, and lime, B., 927.
 in sewers, (P.), B., 384.
 and poisoning of fish, B., 576.
 purification of, by aeration, B., 927.
 effects of gas liquors on, B., 47.
 by activated sludge process, B., 431.
 purification and disposal of, (P.), B., 48.
 biological purification of, B., 207.
 removal of grit from, (P.), B., 80, 528.
 removal of hydrogen sulphide from, by aeration, B., 431.
 removal of scum from sludge-settling tanks for, (P.), B., 734.
 apparatus for aeration of, (P.), B., 1072.
 air-diffusers for aeration of, B., 527.
 clarification of, B., 927.
 apparatus for, (P.), B., 576.
 coagulation of, at Grand Rapids, Mich., B., 1168.
 disposal of, (P.), B., 176.
 plant for, (P.), B., 176, 1072.
 chlorination of, B., 383.
 effect of chlorine on reduction of *B. coli* in, B., 208.
 filtration of, B., 1071.
 colloids in, B., 207, 976.
 growth of slime in, B., 80.
 control of *Psychoda alternata* on trickling-filters for, B., 79.
 collection and disposal of food wastes and, B., 430.
 effect of comminution of solids of, on their digestion, B., 927.
Sewage, incineration of solids from, B., 431.
 ignition temperature of solids of sludge and, B., 1168.
 oxidation of gas-works liquors in mixtures with, B., 47.
 influence of caesium on oxygen demand of, B., 431.
 influence of organic carbon-total nitrogen ratio on biochemical oxygen demand of, B., 431.
 comparison of permanganate and biochemical oxygen demands and direct oxygen absorption of, B., 1120.
 reputed poisoning of cattle by, B., 1168.
 of Backnang, a leather-manufacturing town, B., 752.
 chlorinated, clarification of, (P.), B., 880.
 domestic, digestion of mixtures of packing-house wastes and, B., 431.
 analysis of, B., 927.
 determination in, of suspended solids, by light absorption, B., 1071.
 determination of organic matter in slumps and sludges from, B., 1120.
Sewage sludge, drying of, on vacuum filters, B., 656.
 deammoniation of, B., 431.
 dewatering of, and manufacture of manure, (P.), B., 480.
 at Baltimore (Maryland) works, B., 527.
 digestion of, B., 48; (P.), B., 928, 1120, 1168.
 tanks for, B., 431.
 at high and low temperatures, B., 927, 1120.
 at Meadville, Penn., B., 431.
 overflow liquor from digestors for, B., 80.
 effect of digestion on drainability of, B., 208.
 handling of, (P.), B., 832.
 disposal of, (P.), B., 1072.
 lipins of, A., 208.
 rôle of nitrogen in biological oxidation in, B., 880.
 life of *B. typhosus* in, B., 208.
 use of, as a fertiliser, B., 1071.
 production of fertilisers from, (P.), B., 375.
 activated, biochemical changes in formation of, B., 926.
 zeolitic nature of, B., 752.
 cation-exchange capacity of, B., 1071.
 effect of aeration on rate of oxidation of, B., 80.
 settling and filtration of aerated liquors from, B., 927.
 bulking of, B., 208.
 utilisation of carbohydrates and proteins by micro-organisms in, B., 1168.
 oxygen utilisation of, B., 1120.
 determination of suspended solids in, B., 431.
 digested, vacuum filtration of, B., 79.
 determination in, of solids, B., 80.
Sewers, determination of hydrogen sulphide in gases in, B., 656.
Sewer pipes, fireclay, effect of sodium aluminate in, B., 901.
Sex, differences of, in muscle proteins, A., 377.
Sex glands, effect of anterior pituitary on, A., 667.
Sexual functions in rats, action of bromoacetic acid on, A., 656.
Shakers, converted air-pumps as, A., 58.
Shako, fatty substances of, A., 772.
Shakosterol, and its acetate, A., 772.
Shale, separation of mixtures of coal and, (P.), B., 1075.
 distillation of, B., 1028.
 apparatus for, (P.), B., 1073.
 retorts for, (P.), B., 890.
 thermal decomposition of, B., 53.
 kerogen in, B., 1028.
 uses of ash and tar from, B., 1028.
 production of aluminium oxide from ash from, B., 802.
 bituminous, use of, in cement, B., 805.
 as fuel, B., 1028.
 in the Lower Volga areas, A., 841.
 of Petrograd district, B., 1028.
 coal, Illinois and Pennsylvanian, petrology of, A., 603.
 deformed, classification of, A., 61.
 Fushun green, B., 1124.
 Georgia, production of alumina and potash from, B., 627.
 Kashpira, nitrogen in liquid low-temperature carbonisation products of, B., 211.
 destructive hydrogenation of, B., 53.
 kukersite, in Estonia, B., 1028.
 of Mogul mine, S. Dakota, silicification of, A., 1344.
 oil, origin of, B., 53.
 in China, B., 1029.
 Estonian, use of, in furnaces, B., 483.
 from Szechuan, B., 259.
 Pennsylvanian, petrology of, A., 725.
 Petrograd, acidic fractions of tars from, B., 53.
 Savilevsk, Saratov, phenols in tar from, B., 790.
 Volga, production of ichthyol from, B., 1028.
Shale oil, Fushun, composition of, B., 391, 613, 885.
 cracking hydrogenation of, at high pressure, B., 934.
Shaohsing-Chiu, components of, A., 1180.
Sharks, basking, hydrocarbon in, A., 233.
Shark-liver oil, B., 640, 1145, 1150.
 basking, B., 641.
Shaving creams, manufacture of, (P.), B., 597.
 superfatted, manufacture of, (P.), B., 194.
Shea nuts, constituents of, B., 819.
Sheep, live-weight increase of, fed on clovers and grasses, B., 117.
 feeding of, with rhubarb leaves, B., 972.
 growth of wool on, in relation to diet, B., 827.
 value of ammonium bicarbonate in nitrogen metabolism of, B., 379.
 phosphorus requirements of, B., 248.
 killing of worms in, B., 1014.
 with coast disease, effect of cobalt on, A., 1008.
 merino, relation between nutrition and wool production in, A., 389.
 effect of sulphur on, A., 1413.
 Australian, basal metabolism of, A., 387.
Sheep skins. See Skins, sheep.
Sheet materials, production of, (P.), B., 945.
 decorative, manufacture of, (P.), B., 1057.
 laminated, (P.), B., 1139.
Shell, prevention of "mouth flame" from, B., 879.
 shot-. See under shot.
Shells, deterioration of, stored in oak cabinets, A., 234.
 iridescent, X-ray structure of, A., 1194.
Shellac, B., 160.
 nature and constitution of, B., 69, 599.
 heat-curing of, B., 33.

- Shellac**, chemical treatment of, (P.), B., 111.
thermo-plastic properties of, B., 562.
determination of solubility of, in organic liquids, B., 69.
solutions of, for preparation of photographic printing formes, (P.), B., 34.
manufacture of insulating materials from, B., 562.
varnishes of. See under Varnishes.
"polymerised," dispersing of, B., 33.
- Shellfish**, fatty substances of, A., 772.
- Shigella paradyseptica**, sugar dissimilation by, A., 1420.
- Shikimic acid**, configuration of, and its degradation to aconitic acid, A., 1365.
- Shingles**, manufacture of, (P.), B., 309.
- Shinia**. See *Pistacia lentiscus*.
- Ships**, fireproof rubber flooring for, B., 737.
corrosion of hulls of, by lower sea fauna, B., 635.
corrosion of steel plates in, B., 635.
paints for, B., 319.
paints for bottoms of, B., 160.
fireproofing of woodwork, etc., in, B., 102.
fumigation of, B., 832.
by Clayton method, B., 527.
German, zinc boiler plates in, B., 289.
- Shiso**, colouring matter of, A., 674.
- Shock**, liberation of histamine-like substances in, A., 651.
- Shoes**, use of rejected leather for, B., 863.
use of rubber latex in, B., 961.
crêpe rubber for soles of, B., 241.
attachment of rubber soles to, B., 862.
nitrocellulose adhesive for, (P.), B., 281.
- Shortening agents**, (P.), B., 522.
- Shot**, paper shells for, (P.), B., 224, 704.
- Shōyu**, flavours of, A., 1540.
- Shungite**, A., 1479.
- Siderite**, effect of manganese on equilibrium in thermal decomposition of, B., 230.
- Silage**, manufacture of, in mud-walled towers, B., 521.
with addition of acid, B., 251.
acidification in, B., 699.
chemical changes in, B., 379.
use of hydrochloric acid in, B., 922.
fermentation losses in, B., 699.
autolytic processes in, B., 118.
nutrient losses in, B., 251.
effect of added whey on composition of, B., 698.
feeding with, B., 521.
influence of, on nitrogen and mineral metabolism, B., 922.
nutrient losses due to drainage in, B., 699.
use of, in Germany, B., 922.
- A.I.V.**, properties of, B., 971.
bacteriology and chemistry of, B., 521.
nutritive value of, for dairy cows, B., 476.
- A.I.V.** and ordinary, preservation of amino-acids in, B., 567.
canning-factory, feeding value of, B., 251.
grass, B., 1162.
from leguminous plants, proteolysis in, B., 1162.
maize, starch equivalent of, B., 971.
sugar-beet leaf, preservation of, B., 923.
- Silane**. See Silicon tetrahydride.
- Silica**. See Silicon dioxide.
- Silica gel**, structure and activity of, A., 1075.
influence of surface tension of inter-micellar liquid on structure of, A., 1200.
effect of water and alkali on refractive index of mixtures of, with alumina gel, A., 932.
heats of adsorption of ammonia and methylamines on, A., 29.
- Silica gel**, application of, in adsorption, A., 27.
adsorption by, A., 1069.
of benzene vapour, B., 342.
from binary mixtures, A., 1315.
of butyl and propyl alcohols, A., 930.
of halogens, A., 696.
of iodine vapour, A., 441.
of picric acid, A., 696.
of water, and Patrick's adsorption formula, A., 28.
diffusion of electrolytes in, A., 32.
dynamic activity of, with respect to benzene vapour, B., 714.
effect of lime treatment on surface activity of, A., 1200.
recovery of Δ^{β} -butene from air by, A., 1348.
effect of catalyst carrier of, on oxidation of sulphur dioxide, A., 1329.
manufacture of adsorbents from, (P.), B., 899.
for oil regeneration, B., 132.
active, residual water in, A., 1075.
- Silicates**. See under Silicon.
- Siliceous products**, calcination of, (P.), B., 454.
- Silicic acid**. See under Silicon.
- Silicides**, crystal structure of, A., 17.
- Silicoderms**, silicigenous function of, A., 893.
- Silicoethane**, density and compressibility of, A., 1455.
- Silicofluorides**. See Fluosilicates under Fluorine.
- Silicon**, refining of, by vacuum distillation, B., 729.
spectrum of, A., 676.
and its compounds, *K* X-ray spectra of, A., 1293.
vacuum spark spectrum of, A., 271.
active products from action of α -rays on, A., 803.
disintegration of, by α -rays, A., 1297.
isomorphism of, with pentavalent arsenic, A., 1060.
decomposition of solid solutions of, in aluminium, A., 1328.
oxidation of, B., 729.
rôle of, in plant nutrition, B., 73, 565, 1010.
in pancreas and liver in relation to diabetes, A., 108.
- Silicon alloys with aluminium**, A., 693.
production of, by Dnieper Aluminium Combine, B., 1049.
crystal structure of, A., 926.
removal of hard spots from, (P.), B., 414.
with aluminium and phosphorus, (P.), B., 66.
with chromium and iron, carbon solubility of, A., 23.
with copper and nickel, age-hardening of, B., 952.
with iron, quantitative spectrographic analysis of, B., 854.
with manganese, A., 23.
with zirconium, (P.), B., 557.
- Silicon compounds**, *K* spectra of, A., 908.
- Silicon carbide**. See Carborundum.
- tetrachloride**, effect of temperature on viscosity of, A., 438.
fluoride in stellar spectra, A., 1051.
hexafluoride, ionisation curves of, due to polonium α -rays, A., 558.
hydride, unsaturated, A., 311.
tetrahydride (*silane*), infra-red absorption spectrum of, A., 914.
density and compressibility of, A., 1455.
oxidation of, A., 451.
- Silicon hydrides**, oxidation of, A., 1207.
hydrotribromide (*tribromosilane*), Raman spectrum of, A., 807.
dioxide (*silica*), infra-red spectra of, A., 10.
heat-conductivity and structure in aerogels of, A., 444.
thermionic properties of systems of alumina, lithia, and, A., 140.
thermochemistry of systems of, with lime and alumina, A., 36.
volatility of, A., 50.
adsorption on, A., 818.
solubility of, in water, A., 292.
solubility of hydrates of, A., 292.
crystals, stability of, A., 812.
equilibrium of, with alkali oxides, alumina, carbon dioxide, and lime, A., 1323.
with aluminium, calcium, and ferric oxides, A., 448.
in cement, B., 675.
with calcium and manganese oxides, A., 583.
with carbon dioxide and lithium oxide, A., 1323.
with ferrous and magnesium oxides, A., 447.
with lime and with lime and calcium fluoride, A., 157.
transfer of, by water vapour, A., 468.
action of sodium chloride on alumina, ferric oxide, feldspar, kaolin, salt glaze, and, B., 187.
phagocytosis of, by surviving leucocytes, A., 640.
content of, in blood-serum of various animals, A., 1262.
partition of, in lungs, A., 1527.
active, adsorption of vapours by, A., 578.
colloidal, electrochemical properties of, A., 296.
precipitated, production of, (P.), B., 849.
vitreous, atomic arrangement in, A., 1451.
determination of refractive index of, A., 1310.
vitreous powder, electron-diffraction by, A., 1309.
determination of, by petrographic immersion method, A., 317.
in coal, B., 258.
in hydrogen peroxide solutions, B., 1043.
in lungs, A., 1396.
in puzzuolana, A., 317.
in silicates, A., 1215.
in water-glass, B., 60.
oxyhalides, A., 714.
- disulphide**, crystal structure of, A., 1450.
- Silicic acid**, polymerisation in, A., 296.
gels, rhythmic precipitation in, A., 27, 933.
for therapeutic and cosmetic preparations, (P.), B., 355.
glycerols, determination of particle size in, A., 1318.
clarification of beet sugar juice with, B., 1111.
determination of, A., 1472.
photo-colorimetrically, in presence of phosphoric acid, A., 949.
photometrically, A., 1472.
volumetrically, A., 1337.
in soluble silicates, A., 718.
- Silicates**, classification of, A., 686, 953.
rate of formation of, from oxides and quartz, A., 173.

Silicon:—

Silicates, effect of carbon dioxide and carbonates on equilibrium of formation of, A., 935.
 cation exchange between alumina and, A., 293.
 base-exchange, manufacture of, (P.), B., 900.
 from Little Belt Mountains, Montana, A., 726.
 mineral, structure of, A., 1220.
 dilatometry of, A., 953.
 complex, X-ray structure of, A., 725.
 natural and artificial, extraction of constituents of, (P.), B., 355.
 refractory. See Refractories, silicate.
 analysis of, microchemically, A., 1472.
 determination of, in dusts, B., 526.
 determination of, of alkalis, B., 405.
Persilicates, A., 833.
Silicon organic compounds, A., 1258.
Silicon tetramethyl, Raman spectrum of, A., 807.
Tetrathio-orthosilicic acid, radial esters of, A., 1111.
Silicon determination:—
 determination of, spectrographically, A., 719.
 in aluminium, B., 273.
 in aluminium alloys, B., 313.
 in double beryllium fluorides, volumetrically, A., 1093.
 in duralumin, spectroscopically, A., 317; B., 361.
 in cast iron, colorimetrically, B., 358.
 in light metals, photometrically, B., 771.
Silicosis, A., 1022.
 separation of active silica in, A., 1527.
 dusts causing, B., 832.
 biochemistry of, A., 519.
 physiology and pathology of, A., 1270.
 acute, A., 651.
 experimental, A., 386.
 detection of mineral particles in sputum in, A., 386.
12-Silicotungstic acid, caesium salt, crystal structure of, A., 920.
Silicyleic acid, ethyl ester, effect of, in tuberculosis, A., 1528.
Silk, reclamation of, from fabrics, (P.), B., 350.
 degumming of, B., 986.
 revivification of used boil-off liquor from, B., 488.
 dressing of, with aqueous emulsions, B., 626.
 desizing of, B., 945.
 mordanting of, with chrome alum, B., 267.
 weighting of, B., 589; (P.), B., 450.
 with tanning materials, B., 626.
 effect of p_H on electrical resistance of, B., 363.
 degradation of sericin in, by alkalis, B., 986.
 sericin and fibroin in, due to variation of protein of mulberry leaves, A., 1146.
 transfer for decoration of, (P.), B., 627.
 production of insulating materials from, (P.), B., 943.
 Chinese, B., 986.
 dyed, weighted, determination of, by ashing, B., 401.
 raw, differential staining of fibroin and gum of, B., 445.
 boiled, and loaded, determination of humidity of, B., 445.
 Tussah, action of iodine on, B., 95.
 determination of damage in, B., 540.

Silk, micro-Kjeldahl method in analysis of threads and textiles of, B., 665.
 determination of, in textiles, B., 1038.
Silk, artificial, B., 16, 142.
 submicroscopic structure of, B., 142.
 manufacture of, (P.), B., 226, 448, 668, 720, 897, 1137.
 apparatus for, (P.), B., 96.
 rollers for, (P.), B., 267.
 by wet-extrusion, (P.), B., 17.
 production of viscose for, (P.), B., 541.
 treatment of, B., 666.
 after-treatment of, on bobbins, (P.), B., 58.
 after-treatment and dyeing of, in wound form, (P.), B., 1041.
 delustering of, (P.), B., 627, 801.
 dressing of, (P.), B., 98.
 with aqueous emulsions, B., 626.
 drying of, (P.), B., 17.
 in spun cakes, (P.), B., 98, 491.
 mordanting of, B., 625.
 apparatus for washing of, (P.), B., 541.
 spinning of, machines for, (P.), B., 669.
 funnels for centrifugal spinning machines for, (P.), B., 1090.
 treatment of spun cakes of, (P.), B., 301.
 wet treatment of cakes of, (P.), B., 448, 1138.
 agglomeration of fibrils of, B., 666.
 finishing of fabrics of, (P.), B., 801.
 production of threads of, (P.), B., 300.
 wet treatment and drying of threads of, (P.), B., 300.
 spinning of threads, filaments, etc., of, (P.), B., 300.
 manufacture of threads, sheets, ribbons, etc., of, (P.), B., 1040.
 production of matt effects on, (P.), B., 304.
 manufacture of matt threads of, (P.), B., 96.
 manufacture of ribbons, etc., of, (P.), B., 351.
 production of yarns of, (P.), B., 798.
 bonding of rubber to, (P.), B., 989.
 cellulose acetate, manufacture of, from wood-cellulose, B., 623.
 effect of spinning on density and adsorbing power of, B., 719.
 alkaline hydrolysis of, B., 488.
 cuprammonium, manufacture of, (P.), B., 144, 351.
 pot spinning of, (P.), B., 798.
 low-lustre, manufacture of, (P.), B., 401, 1138.
 rayon, manufacture of, (P.), B., 1138.
 from Southern American pine, B., 666.
 filtration methods in, B., 718.
 centrifuge pots for, (P.), B., 624.
 manufacture and properties of, B., 350.
 manufacture of cellulose for, from American pinewood, B., 398.
 pulp for, from southern pine, B., 1039.
 use of pulp in the mass for, B., 350.
 delustering, mildew- and water-proofing of, (P.), B., 898.
 desulphurisation of, (P.), B., 897.
 dyes for, B., 847.
 sizing of, B., 989.
 with bone glue, B., 1140.
 simultaneous spinning, twisting, and purification of, (P.), B., 96.
 acid content of, B., 1087.
 swelling of, in alkali, B., 303.
 finishing of crêpes of, B., 897.
 production of fibres and filaments of, B., 844.
 production of multi-coloured threads of, (P.), B., 898.

Silk, artificial, rayon, metal thread effects in knitted goods of, B., 800.
 conditioning of yarns of, B., 488.
 coating of yarns and fabrics of, with rubber, B., 1140.
 recovery of sodium sulphate from coagulation solutions for, B., 898.
 cuprammonium hydroxide solutions for determination of chemical damage to, B., 540.
 cellulose acetate and regenerated cellulose, determination of, in textiles, B., 1038.
 coloured, stripping of, (P.), B., 303.
 cuprammonium, manufacture of, B., 623.
 dry spinning of, B., 488.
 soft-lustre, spinning solutions for, (P.), B., 1138.
 relation between titre and peripheral length-cross section ratio of, B., 446.
 microscopical determination of titre of, B., 764.
 determination of, in mixtures with cotton, B., 718.
 viscose, manufacture of, regeneration of acid setting baths from, (P.), B., 184.
 pulp for, B., 445.
 desulphurisation of, (P.), B., 897.
 recovery of carbon disulphide from, (P.), B., 301.
 cause of milky flecks on, B., 398, 488.
 action of alkalis on, B., 623.
 determination of carbon disulphide and hydrogen sulphide in air of factories for, B., 1087.
 viscose rayon, pulping of wood for production of, B., 490.
 from cotton linters, properties of, B., 221.
 oiled, determination of oil in, B., 1087.
Silk fabrics, analysis of, B., 670.
Silk fabrics, artificial, cellulose acetate, control of ironing of, B., 540.
 rayon, sizing of, B., 401.
 imitation crimp effects on, B., 670.
 crêpe, B., 398.
 analysis of, B., 670.
Silk fibroin, A., 1146.
 adsorption of pepsin by, A., 1025.
 partial hydrolysis of, A., 648.
 combination of, with polysaccharides, A., 1390.
Silk yarns, for hosiery, influence of twist on shade and dullness of, B., 665.
Silkworms, genetics of, A., 1146.
 biochemistry of, A., 646.
 changes in constituents during metamorphosis of, A., 1013.
 catalase in body-fluids of, A., 1024.
 enzymes of, A., 121, 1025.
 zinc in reproductive organs of, A., 1005.
 metabolism of, A., 391.
 digestion of carbohydrates in mulberry leaves by, A., 523.
 cocoons, influence of ammonia and carbon dioxide on formation of, A., 1022.
 aqueous extracts of, A., 511.
 properties of aqueous solutions of, A., 1398; B., 398, 445.
 colouring matters of, A., 883, 1398.
 action of sulphur gases on, A., 1022.
 Bengal, putrefactive decomposition of, A., 1398.
Silkworm oil, A., 1145.
Sillimanite, refractory properties of, B., 23.
 effect of repeated firing on, B., 768.
Silos, sealed and soil-covered, comparison of, B., 521.

- Silts.** See Soils, silt.
- Silumin,** corrosion-resistance of, B., 637.
- Silumin- γ ,** B., 501.
- Silver,** at. wt. and isotopes of, A., 802.
- recovery of, from ores, etc., (P.), B., 556.
- from silver iodide, A., 591.
- electrolytic recovery of, from residues, B., 555.
- cleaning of, (P.), B., 66.
- spectrum of, A., 1183, 1292.
- X-ray diffraction of, A., 812.
- X-ray reflexion from, A., 801.
- electrodeposition of, from iodide solutions, B., 555.
- effect of colloids on crystallisation velocity of cathodic deposits of, A., 1084.
- deposited on nickel, photo-electric effect in, A., 1191.
- electroplating with, determination of potassium formate in used baths from, B., 105.
- K-electron ionisation of, by cathode rays, A., 1047.
- transport number and valency of, in its mercury alloys, A., 1462.
- transfer of electrons from, to dielectrics, A., 5.
- Fermi proton effect in, A., 803.
- thermo-electric effect in, A., 1312.
- and its alloys, thermo-electric forces of, A., 1066.
- vapour pressure of, measured by Baur and Brunner's method, A., 1454.
- solution of, in potassium cyanide solutions, A., 1332.
- crystal structure of, A., 286, 922.
- crystals of, from Kongsbergfeltet, Norway, A., 1477.
- growth of, in aqueous solutions, A., 450.
- suspended small, vibration of, A., 284.
- recrystallisation of, A., 1060.
- sols, and its chloride, scattering and absorption of light in, A., 279.
- effect of gases on, A., 1459.
- cathode passivity of, in silver nitrate solutions, A., 1326.
- structure and physical properties of thin films of, A., 1449.
- recrystallisation of thin films of, A., 1450.
- coating with, of celluloid sheets, (P.), B., 107.
- of glass and translucent materials, (P.), B., 949.
- of non-ferrous metals, (P.), B., 156.
- of rubber, (P.), B., 1000.
- protection of, from tarnishing, (P.), B., 362.
- prevention of, from tarnishing, (P.), B., 956.
- anode film formation on, A., 1083.
- tarnish-resisting films on, B., 459.
- removal of electrodeposits of copper from antique coins of, B., 1050.
- reaction of, with ferric ions, A., 824.
- on sulphur, A., 1212.
- use of, in corrosion-resisting plant, B., 153.
- as a standard in volumetric analysis, A., 54.
- precipitation of, on zinc shavings, B., 500.
- paints for imitation of, B., 561.
- manufacture of therapeutic and disinfectant preparations from, (P.), B., 524.
- growth of human fibroblasts in media containing, A., 1021.
- accumulation of, in eyes and organs after injection, A., 399.
- colloidal, action of, on growth of bacteria, A., 1031.
- Silver,** colloidal, analysis of ointments of, B., 654.
- granular, as absorbent for gaseous halogens, A., 952.
- ionised, spectrum of, A., 907.
- Silver alloys,** lattice parameters of, A., 919.
- dental, B., 1098.
- non-tarnishing, (P.), B., 461.
- potentiometric quantitative analysis of, B., 730.
- Silver alloys with aluminium,** A., 576.
- dilatometric study of, B., 551.
- solid solutions in, A., 1455.
- with aluminium and magnesium, A., 158.
- with cadmium, ϵ -, γ -, and β -phases in, A., 439.
- with cadmium and copper, A., 158.
- for bearings, B., 552.
- with calcium, structure of, A., 1198.
- with copper, X-ray structure of, A., 1198.
- Widmannstätten structure of, A., 693.
- separation of components of, (P.), B., 999.
- mixed crystals of, A., 692.
- effect of nickel on, A., 23.
- eutectic, A., 926.
- with gold, A., 158.
- with gold and platinum, action of sulphuric acid on, A., 721.
- with indium, A., 576.
- crystal structure of, A., 285.
- with mercury, B., 500.
- electrosynthesis and structure of, A., 1330.
- with palladium containing hydrogen, A., 1456.
- thermo-electric effect with, A., 689.
- with tin, dental, (P.), B., 908.
- with zinc, A., 1198.
- structure of, A., 812.
- Silver salts,** adsorption of optical sensitizers for, A., 697.
- action of bromine on, A., 857.
- action of nitrosyl chloride on, A., 1212.
- production of colloidal solutions of, in polyhydric alcohols, (P.), B., 621.
- reduction of, by organs of arthropoda, A., 378.
- at surface of chloroplasts, A., 131.
- Silver arsenate,** influence of light on periodic precipitation of, A., 580.
- bromide and iodide, coagulation of hydrosols of, A., 821.
- chloride, omission band spectrum of, A., 1051.
- photo-electric conductivity in, A., 147.
- solubility of, A., 576.
- colloidal, production of, B., 990.
- chromate, influence of light on periodic precipitation of, A., 580.
- action of hydrogen sulphide on, A., 1470.
- deuteride, spectrum of, A., 1183.
- ferrite, microcrystalline, preparation of, A., 314.
- halides, absorption spectra of, A., 562.
- light absorption by alkali halides and, A., 808.
- plastic properties of crystals of, A., 814.
- induced reduction of, by sodium sulphite, A., 831.
- complex compounds of, with halides and silver salts, A., 695.
- additive compounds of, with phosphino, A., 49.
- peptisation of, by ultrasonic waves in gelatin, A., 1459.
- hydroxide, conductivity of, in aqueous solution, A., 1078.
- Silver iodide,** electrokinetic potential of, A., 823.
- effect of, on photographic sensitivity, B., 878.
- discoloration of, by aqueous ammonia, A., 943.
- colloidal, stability of, A., 297.
- sols, stability of, A., 1319.
- mercury iodide, modifications of, A., 567.
- nitrate, electrolysis of aqueous solutions of, A., 831.
- action of charcoal on aqueous solutions of, A., 1332.
- reaction of, with benzyl chloride, A., 1466.
- complex salt of mercuric cyanide and, A., 944.
- diammoniate, crystal structure of, A., 285.
- nitrite, thermal dissociation of, A., 1083.
- oxide, band spectrum of, A., 1188.
- photo-electric distribution curves for, A., 682.
- decomposition of, by slow electrons, A., 713.
- heat of solution of, in hydrofluoric acid, A., 935.
- constitution of, in solution in ammonia and amines, A., 936.
- action of, on mercuric iodide, A., 459.
- phosphate, influence of light on periodic precipitation of, A., 580.
- sulphide, kinetics of formation of, A., 1208.
- rate of formation and conductivity of β -form of, A., 567.
- effect of free electrons on thermal conductivity of, A., 815.
- transition point and thermodynamics of, A., 1078.
- solubility product of, A., 584.
- Argentic salts** in acid solution, A., 1079, 1088.
- Silver organic compounds,** with thiolpyrimidines, (P.), B., 750.
- with thiosemicarbazide and thiosemicarbazones, A., 737.
- complex, with 4-hydroxy-2-thion-1:2:3:4-tetrahydroquinazolino, A., 1253.
- optically active, A., 868.
- water-soluble, manufacture of, (P.), B., 973.
- Silver nitrate,** compound of, with benzidine, A., 613.
- Silver detection and determination:**—
- electro-analysis of, with three electrodes, A., 949.
- precipitation of, A., 1212.
- assay of residues of, B., 636.
- detection in, of cadmium and palladium, spectroscopically, B., 552.
- determination of, with dithizone, A., 719.
- electrolytically, A., 1473.
- gravimetrically, A., 836.
- with Liesegang rings, B., 645.
- by photometric titration, A., 185.
- potentiometrically, A., 185, 720.
- in alloys, microchemically, B., 678.
- in "katadynised" wines and liquid foods, B., 744.
- in ores, by drop reaction, A., 1093.
- in organic medicinals, B., 654.
- in water, A., 719.
- Silver articles,** tarnish-resisting, (P.), B., 273.
- Silver ions,** conductivity and equilibrium of, with sodium and chlorine ions in gelatin solutions, A., 825.
- decomposition of gelatin complex with, A., 712.
- reaction of, with gelatin, A., 702.

- Silver minerals of Colquijirca, Peru, A., 1101.
 in relation to diabase, A., 725.
 Silver mirrors, manufacture of, (P.), B., 107.
 reflexion of light from, on transition from amorphous to crystalline state, A., 153.
 Silver ores, mineralisation in, at Sabinal, Mexico, A., 955.
 arsenide and sulphide, extraction of metals from, (P.), B., 156.
 Simaruba bark as an abortive, A., 396.
 Brazilian, constituents of, A., 674.
 Simsim cake, constituents of, B., 819.
 Sinomenine, A., 368, 1138.
 Sinomenium, alkaloids of, A., 637.
 Sintering apparatus, (P.), B., 385.
 Siphoning device, A., 600.
Sipunculus, osmotic pressure and mol. wt. of hæmoerythrin of, A., 229.
 action of vital stains and nitrophenols on respiration of blood-cells of, A., 245.
Sipunculus nudus, composition of hæmocyanin and hæmoerythrin from, A., 372.
 Sisal, molecular structure of, A., 1061.
 pulping of, (P.), B., 96.
 diseased, plants of, in E. Africa, B., 516.
 Sitostane, chloro-, A., 1493.
 Sitostanol acetate, degradation of, by chromic acid, A., 617, 1120.
*epi*Sitostanol, and its acetate, A., 1371.
 Sitostan-6-one, and chloro-, and their derivatives, A., 1493.
 Sitosterol, structure of, A., 1493.
 γ -Sitosterol, from soya beans, decomposition of, A., 981.
 Sitosteryl citraconate, A., 1493.
 Sizes, manufacture of, B., 588; (P.), B., 368.
 by Bewoid system, B., 845.
 losses in, B., 775.
 for paper, etc., (P.), B., 223, 669.
 removal of, with enzymes, (P.), B., 722.
 rosin, physical properties of, B., 490.
 waterproof, for fibre products, (P.), B., 186.
 wax, for paper, B., 143.
 Sizing, use of magnesium chloride in, B., 224.
 red seaweeds for, B., 986.
 Skin, vitamin-C in, A., 546.
 absorption of vitamin-D through, A., 129.
 effect of suppression of renal function on water content of, A., 518.
 sensitivity of, to dichromato, A., 781.
 pathological pigmentation of, A., 107.
 cleansing cream for, (P.), B., 880.
 sunburn cream for, (P.), B., 384.
 deodorant for, (P.), B., 576.
 elimination of chlorine in diseases of, A., 1009.
 frog's, electrical properties of, A., 771.
 effect of rare earths on polarisation capacity of, A., 1534.
 relation between metabolism, function, and potential of, A., 1404.
 effect of salt and sugar solutions on water exchange through, A., 1012.
 human, lesions of, produced by adhesive plaster, B., 1163.
 Skins, treatment of, (P.), B., 242, 323, 865*.
 curing of, (P.), B., 739.
 degreasing of, (P.), B., 115.
 apparatus for preservation and tanning of, (P.), B., 929.
 impregnation of, with rubber solutions, (P.), B., 371.
 pickling of, B., 563, 644.
 tanning of, (P.), B., 864.
 Skins, elimination of mineral acid from, in vegetable tanning, B., 281.
 unhairing of, (P.), B., 777.
 abnormal behaviour of, in sulphite-cellulose waste liquors, B., 1007.
 analysis of enzymic bating materials for, B., 1105.
 protection of, against skin beetle, B., 1007.
 cod's, chrome-tanning of, B., 916.
 fur, treatment of, (P.), B., 916.
 goat, microscopic detection of, B., 468.
 pig, production of velour from, B., 420.
 raw, treatment of, (P.), B., 371.
 curing of, in Australia, B., 1007.
 preservation of, (P.), B., 323.
 by silver, B., 1007.
 production of sausage skins, etc., from, (P.), B., 739.
 seal, tanning of, B., 818.
 sheep, pickling of, B., 280.
 effect of neutralisation of, after chrome tanning, on dyeing on its flesh side, B., 863.
 after pickling, on their chrome-tanning, B., 863.
 storage of, B., 241.
 damage to, by crude naphthalene, B., 600.
 dyed, effect of tanning on colour of flesh side of, B., 1008.
 Sky, night, light of, A., 424.
 spectrum of, A., 138, 272, 676, 800.
 auroral green line in, A., 556.
 oxygen in, A., 1046.
 emission spectrum of, A., 3.
 "Skyr." See under Milk.
 Slag, phase equilibria in, A., 35.
 equilibria of molten metals with, A., 303.
 corrosive action of, on refractory materials, B., 851.
 production of fibres, threads, etc., from, (P.), B., 591.
 basic, solubility of, in water, B., 493, 848.
 oxidising power of, A., 704.
 manurial action of superphosphates and, B., 372.
 open-hearth, extraction of vanadium from, B., 409.
 blast-furnace, hydraulic properties of, B., 903.
 granulation of, by Bochum Verein process, B., 62.
 solubility of sulphur in, B., 498.
 use of, as fertiliser, B., 689.
 manufacture of Portland cement from, B., 725.
 light-weight concrete from, B., 726.
 effect of sea-water on concrete from, B., 547.
 production of glass from, B., 453, 495.
 production of foamed slag from, (P.), B., 998.
 ferrous, nitrogen content of, B., 548.
 fused, viscosity and plasticity of, A., 820; B., 1049.
 iron blast-furnace, behaviour in mortars and concrete of sulphides in, B., 102.
 Magnetitgorsk, spectral analysis of, B., 1046.
 open-hearth, effect of fluorspar in, B., 498.
 analysis of, B., 1046.
 from slag-tap furnaces, B., 130.
 Thomas, use of, in fertilisers, B., 422.
 from Traill blast furnaces for lead, B., 412.
 Ural titanomagnetite, recovery of vanadium from, B., 723.
 determination in, of sulphur, A., 1473; B., 723.
 Slag wool, manufacture of, (P.), B., 1074.
 Slash-pine. See under Pino.
 Slate, coating of surfaces of, (P.), B., 456.
 pigments for colouring of, (P.), B., 815.
 uses of, B., 932.
 crystalline, origin of, in Algeria, A., 323.
 roofing, weather-resistance of, B., 547.
 Slide rule, humidity, A., 1343.
 Sludge, drying of, (P.), B., 337.
 filters for, (P.), B., 658.
 apparatus for decantation of liquid from, (P.), B., 4.
 apparatus for measuring viscosity of, B., 49.
 apparatus for transport of, (P.), B., 611.
 See also Sewage sludge.
 Slurries, from the Ruhr, solvent extraction of, B., 6.
 Small-pox, urine in, A., 1150.
 Smekal-Raman effect, in inorganic compounds, A., 428.
 Smell, threshold differences in, A., 1023.
 Smelting apparatus, gas volumes and dust losses in, B., 996.
 Smoke, filters for, (P.), B., 930, 1027.
 for respirators, (P.), B., 5.
 density meter for, (P.), B., 533.
 coagulation in, A., 444, 700.
 pollution of air by, B., 976.
 coloured, production of, (P.), B., 255.
 dyes for, B., 207.
 electro-optical apparatus for detection of, (P.), B., 507.
 Snails, effect of adrenaline and insulin on blood-sugar and carbohydrate metabolism of, A., 1172.
 blood of. See under Blood.
 uric acid synthesis in, A., 1015.
 active and hibernating, glycogen and accompanying substance in, A., 232.
 starved, galactogen and glycogen in, A., 232.
 Snakes, Indian and South African, anti-venomous from, A., 1394.
 ringed, composition of fat of, A., 510.
 tiger-, venoms of. See under Poisons.
 Snow, isotopes in, A., 953.
 adsorption of carbon dioxide by, A., 190, 600.
 Snow water. See under Water.
 Soap or Soaps, dimensions of molecules of, deduced from surface tension, A., 1458.
 micelles of, A., 299.
 structure of, B., 1149.
 manufacture of, (P.), B., 109, 319*, 597.
 in Ceylon, B., 317.
 and glycerol, (P.), B., 276.
 drying of, B., 1149.
 spray-drying of, (P.), B., 1102.
 degree of milling of, B., 1149.
 moulding plant for, (P.), B., 464.
 finishing and drying of bases for, B., 814.
 use of colloidal clay in, B., 913.
 use of pine oil in, B., 597.
 rosins for, B., 277.
 use of sodium hexametaphosphate in, B., 462.
 prediction of browning of, B., 317.
 formation of lathers of, A., 312.
 velocity of solution of, A., 587.
 properties of lecithin solutions of, A., 31.
 determination of rate of solution and foaming power of, B., 462.
 colloid chemistry of, A., 163.
 antioxidants for preservation of, B., 1003.
 germicidal and detoxifying properties of, B., 508.
 substitutes for, (P.), B., 365.
 laboratory tests on, B., 275.
 alkylolamine, treatment of, (P.), B., 109.

Soap or Soaps, calcium, dispersing and regenerating agents for, B., 683.
 cold-process, manufacture of, (P.), B., 913.
 depilatory, (P.), B., 1003.
 dry-cleaning, determination of, in petroleum solvents, B., 814.
 of claudinised fatty acids, detergent power of, B., 1149.
 germicidal, manufacture of, (P.), B., 641.
 effect of alkalis in, B., 976.
 liquid, superfatting of, with "trollhetta" oil, B., 597.
 metallic, B., 68.
 dispersion of, in fatty acids, B., 732.
 colloid chemistry of, A., 163.
 naphthenic acid, B., 31.
 paste, (P.), B., 641.
 powdered, production of, (P.), B., 416, 641.
 determination in, of perborates, B., 275, 639.
 resin. See Resin soaps.
 rosin, production of, from solidified pine pitch, B., 1055.
 solid, properties of, B., 317.
 sulphonated, detergent power of, B., 159.
 sulphur, odourless, manufacture of, (P.), B., 238.
 superfatted, manufacture of, (P.), B., 194, 365.
 toilet, (P.), B., 641.
 washing, optimum detergency in, B., 596.
 determination in, of unsaponified fat, B., 1002.
 of fatty acids, volumetrically, B., 683.
 of free alkali, B., 31, 237, 462.
 of saponification value and free alkali, B., 731.
Soap curds, electro-osmosis and cataphoresis in, A., 299.
 hydration of crystalline fibres of, A., 163.
Soap solutions, B., 275.
 selective adsorption from, A., 1070.
 influence of p_H on surface tension of, A., 1458.
 activity coefficients of, A., 302.
 precipitation of, by alkali and alkaline-earth salts, A., 120.
 mixed, bubbles in, B., 275.
Soapstones, baked, electrical insulation of, B., 858.
Soda-alunite, from Molokai, Hawaiian islands, A., 323.
Soda-pulp, evaporators for black-liquor from, B., 222.
Sodamide, production of, electrolytically, by "GIPCh." method, B., 107.
 reactivity of, A., 49.
 introduction of amino-groups into alkaloids by, A., 635, 764.
 amination of alkaloids by, A., 1136.
 fission of ethers by, A., 1119.
 use of, in formation of ketones, A., 765.
Sodium atoms, reaction of, with hydrogen and deuterium chlorides, A., 1327.
 transmutations of, by deuterons, A., 277.
 manufacture of, (P.), B., 909.
 electrolytically, (P.), B., 957.
 purification of, (P.), B., 157.
 and preservation in a silvery state, A., 944.
 press for, A., 1099.
 excitation of D-line in spectrum of, A., 907.
 D-lines in spectrum of, and dissociation of its salts in flames, A., 675.
 Paschen-Back effect and resonance spectrum of, A., 1.
 vacuum spark spectrum of, A., 271.

Sodium, X-ray spectrum of, A., 138.
 K X-ray spectra of, A., 1293.
 Zeeman effect in spectrum of, A., 424.
 discharge potential of, at mercury cathodes, A., 706.
 self-ionisation of, at glowing tungsten and rhenium surfaces, A., 4.
 magnetic susceptibility of, in liquid ammonia, A., 18.
 Hall effect in, A., 572.
 vapour, resonance discharge in, A., 555.
 velocity of reaction of, with halogenobenzenes, A., 1082.
 solubility of, in aluminium, A., 928.
 solutions of, in fused sodium hydroxide, A., 166.
 velocity of solution of, in solutions of alcohols in benzene, toluene, and xylene, A., 308.
 colloidal, formation and decomposition of, in rock salt, A., 311.
 mobility of, on tungsten, A., 909.
Sodium alloys with cesium, solidification diagram of, A., 22.
 with mercury, surface tension of, A., 811.
 liquid, colloidal nature of, A., 295.
 containing iron, A., 590.
 with potassium, cleaning of, A., 312.
 liquid, electron emission in reactions of, A., 1293.
 diffraction of X-rays by, in magnetic fields, A., 1306.
 magneto-resistance of, A., 566.
Sodium salts, molecular volume of water in, A., 916.
 alkali losses after administration of, A., 115.
 of oxy-acids, A., 591.
Sodium aluminate, A., 703.
 manufacture of, (P.), B., 672.
 determination in, of sodium hydroxide and sulphide, B., 541, 723.
 antimonate, formula of, A., 1470.
 Disodium *ortho*arsenate, and its hydrates, A., 591.
Sodium arsenite, velocity of oxidation of, in atmospheric oxygen, A., 1082.
 destruction of locusts in flight by, B., 1014.
 borate, separation of, from the chloride by flotation, B., 268.
 and boric acid, by flotation from salt mixtures, B., 722.
 equilibrium of, with water, A., 1333.
 Raman effect in, A., 564.
 viscosity of fused mixtures of boron trioxide and, A., 24.
 crystallisation of, from solutions, (P.), B., 355.
 equilibrium of, with the chloride and potassium chloride, A., 36.
 reaction of glycerol-water solutions of, A., 1205.
 pentahydrate, transition of, into the decahydrate, A., 313.
 anhydrous, production of, (P.), B., 991.
 micro-titration of, A., 1337.
 borate, carbonate, and hydroxide, p_H of solutions of mixtures of, A., 305.
 borate and dihydrogen phosphate, viscosity of fused mixtures of, A., 24.
 metaborate, properties of, A., 434.
 metaborate and metaphosphate, viscosity of fused mixtures of, A., 24.
 pentaborate, solubility of, in water, A., 934.
 pentaborate and chloride, equilibrium of, with water, A., 934.
 perborate, vapour pressure and dehydration of, A., 934.

Sodium bromate and sulphate, equilibrium of, with water, A., 825.
 bromide, total hydration of ions of, A., 1459.
 solubility of, in acetone, A., 928.
 carbonate, production of, by Solvay process, B., 145.
 from the sulphate, B., 99.
 and ammonium sulphate, from sodium sulphate, B., 145.
 smelting furnaces for, B., 186.
 in saline water of Peru, B., 704.
 rust-proofing material for tanks for treatment of waste products from, B., 990.
 equilibria of, with barium and potassium chlorides, A., 303.
 with the chloride and potassium chloride, A., 36.
 decomposition of, by heat, A., 48.
 decomposition of solutions of, A., 591.
 causticisation of solutions of, by granulated lime, B., 99.
 heat of reaction of causticising of, by Löwig's method, B., 99.
 reaction of, with calcium acetate, B., 99.
 decahydrate, manufacture of, (P.), B., 355.
 carbonate and hydrogen carbonate, evolution of carbon dioxide in electrolysis of, A., 45.
 carbonate and hydroxide, manufacture of ammonia and, (P.), B., 269.
 adsorption of, by aluminium hydroxide, A., 1315.
 sesquicarbonate, production of, (P.), B., 991.
 hydrogen carbonate, changes of, on storage, B., 60.
 effect of, on glycaemia, A., 1534.
 chlorate, production of, from the bicarbonate or hydroxide without evaporation, B., 1091.
 action of, on plants and soils, B., 821.
 injury of cereals by, B., 472.
 analysis of, B., 990.
 perchlorate, production of, by electrolysis, B., 1042.
 chloride, production of, B., 848.
 apparatus for, (P.), B., 1043.
 from brine, (P.), B., 269.
 refining of, B., 492.
 filters for, (P.), B., 590.
 electron diffraction from, A., 153.
 elastic properties and recrystallisation of, and study of metal mechanics, A., 154.
 electrolysis of, in liquid ammonia, A., 306, 1080.
 prevention of corrosion of iron tanks for, B., 1048.
 conductivity of, in aqueous glycerol solutions, B., 169.
 molecular heat of, at high temperatures, A., 20.
 thermal expansion of rock salt and, A., 436.
 heats of dilution, molal heat contents, and heat capacities of aqueous solutions of, A., 169.
 effect of glycine and ethyl alcohol on f.p. of aqueous solutions of, A., 30.
 solubility of, in liquid ammonia, A., 818.
 in aqueous hydrochloric acid, A., 1204.
 thermodynamics of ionised water in solutions of, A., 1461.

- Sodium chloride**, surface tension of solutions of, with hydrochloric acid and with potassium chloride, A., 1316.
with acetic acid and with ethyl alcohol, A., 1316.
solubility of calcium sulphate in saturated solutions of, A., 441.
breakdown voltage of crystals of, A., 683.
conductivity and structure of deformed crystals of, A., 1303.
effect of tin ions on growth of crystals of, A., 919.
equilibria of, with aluminium and potassium chlorides, A., 168.
with ammonium chloride and water, A., 303.
with platinum chloride and water, A., 583, 1461.
with potassium and magnesium chlorides and water, A., 448.
with sodium iodate and potassium chloride and iodate, A., 448.
reaction of, with amino-acids, A., 1460.
with kaolin at high temperatures, B., 722.
production of substitutes for, (P.), B., 226.
testing of physiological solutions of, A., 270.
physiological action of hypertonic solutions of, A., 530.
effect of hypertonic solutions of, on elimination of dyes by kidneys, A., 1148.
effect of, on acid-base balance in blood, A., 524.
on adrenalectomised rats, A., 1413.
in diet on blood, A., 642.
effect of diet deficient in, on blood and urine, A., 892.
intestinal absorption of, A., 540.
effect of calciferol on resorption of, A., 1173.
action of induced fever on lachrymal elimination of, A., 394.
determination of, in butter, B., 1066.
in foods, B., 1116.
in mustard, B., 1020.
determination in, of iodine, B., 990.
chloride, sulphate, and bisulphate, equilibrium of, in solid state with hydrochloric acid gas, A., 1323.
chromate, conversion of, in solution into the dichromate by carbon dioxide, A., 452.
action of hydrogen sulphide on, A., 1470.
dichromate, manufacture of, (P.), B., 494.
deuteride, absorption spectrum of, A., 279, 561.
ferrite, microcrystalline, preparation of, A., 314.
ferroate, preparation and properties of, A., 314.
fluoride, purification of, A., 179.
electron diffraction from, A., 153.
specific heats of, A., 437.
solubility of, in water, A., 935.
effect of, on activity of digestive enzymes, A., 531.
on teeth of white rats, A., 399.
analysis of, B., 268.
fluoride and sodium beryllium fluoride, equilibrium of, with water, A., 583.
fluoroaluminate, specific heat of, A., 437.
fluosilicate, effect of laundering on mothproofing with, B., 945.
determination of, in cryolite, B., 21.
- Sodium halides**, diamagnetic susceptibilities of, A., 149.
hydrosulphide, determination of, argentometrically, A., 596; B., 723.
hydroxide, production of, (P.), B., 269.
from brine, (P.), B., 269.
from the sulphate, B., 766.
purification of solutions of, (P.), B., 186.
concentration of solutions of, (P.), B., 899.
adsorption of, by cellulose fibres, A., 29.
activity coefficients of water in solutions of, A., 447.
activity coefficients of water in methyl alcohol solutions of, A., 447.
equilibria of, with butyric acid and water, A., 303.
with the nitrate, A., 447.
kinetics of reaction of, with bromoethanes in ethyl alcohol, A., 1465.
determination of, in sodium aluminate, B., 451.
hypochlorite, oxidising activity of, B., 301.
preparation from, (P.), B., 1043.
hyposulphite, production of, B., 451.
Trisodium periodate, preparation of, A., 716.
- Sodium paraperiodate**, compounds of, with zinc and alkaline-earth salts, A., 51.
iodide, conductivity of, in molten iodine, A., 584.
equilibrium of, with bismuth iodide and water, A., 825.
dihydrate, additive compound of, with methyl ethyl ketone, A., 22.
mercurisulphide, decomposition of, by water, A., 1083.
niobate, neutralisation of aqueous solutions of, A., 825.
niobates, conductivity and hydrolysis of, A., 825.
nitrate, production of, from calcium nitrate, (P.), B., 226.
and chlorine, from salt, B., 1141.
photo-dissociation of, A., 682.
oxygen overvoltage in electrolysis of mixtures of, with lithium and potassium nitrates, A., 1079.
electrolysis of solutions containing acetic acid, sodium acetate, and, A., 1105.
total hydration of ions of, A., 1459.
thermal expansion of, A., 21.
solubility of, with aluminium, iron, and potassium nitrates, A., 928.
nitrite, infra-red absorption spectrum of, A., 806.
inversion of, with nitrogen oxides, A., 452.
hypotensive action of, in dogs, A., 1413.
monoxide, equilibrium of, with boron sesquioxide, A., 434, 574.
peroxide, preparation of oxygen from, A., 51.
phosphate, production of, B., 304.
use of, in protection of boilers against scaling, B., 257.
assay of, B., 606.
metaphosphate, emulsification of processed cheese with, B., 1161.
use of, in textile processes, B., 800.
metaphosphates, anhydrous, crystal structure of, A., 571.
action of water on, A., 944.
thermal analysis of, A., 591.
- Sodium hexametaphosphate**. See Calgon.
monohydrogen phosphato, manufacture of, (P.), B., 899.
hydrate, dissociation pressure of, A., 302.
solubility of, B., 20.
anhydrous, manufacture of, (P.), B., 899.
dihydrogen phosphato, manufacture of boric acid and, (P.), B., 305.
dihydrogen pyrophosphate, production of, (P.), B., 672.
silicate, use of, in building, B., 950.
adhesive composition from, (P.), B., 1092.
determination in, of silica, B., 60.
metasilicate, stability of solutions of, B., 225.
basic, hydrated, production of, (P.), B., 543.
hydrated, production of, (P.), B., 544*.
hydrates, crystallisation of, (P.), B., 494.
persilicate, production of, B., 671.
pyrosilicate hydrate, manufacture of, (P.), B., 494.
sesquisilicate, manufacture of, (P.), B., 269.
detergent properties of, B., 462.
silicofluoride. See sodium fluosilicate.
sulphate, manufacture of, (P.), B., 672.
from brine, (P.), B., 269.
by Leblanc process, B., 898.
recovery of, from rayon coagulation solutions, B., 898.
electrical conductivity of, A., 37.
solubility equilibria of, A., 1314.
solubility of, in ammonium carbonate and acid carbonate solutions, A., 928.
equilibrium of, with aluminium sulphate and water, A., 935.
with ammonium hydrogen carbonate and water, A., 168.
with magnesium sulphate and water, A., 303.
with sulphuric acid and water, A., 703.
reduction and causticising of, B., 1042.
reduction of, with hydrogen, methane, and water-gas, B., 354.
reaction of, with oxalic acid, A., 961.
production of soda and sulphur from, B., 99.
sulphate *decadecaterate*, transition point of, A., 447.
samarium sulphate, A., 180.
sulphide, production of, from the sulphate, B., 354.
thermoelectrically, B., 402.
refractory materials for ovens for, B., 406.
viscosity of, A., 816.
anhydrous, manufacture of, (P.), B., 269.
determination of, argentometrically, A., 596; B., 723.
in sodium aluminate, B., 451.
sulphite, photobiological action of, on red blood corpuscles, A., 1275.
thioantimonate, crystal structure of, A., 152.
thiosulphate, solubility of, in ethyl alcohol-water mixtures, A., 292.
stabilisation of solutions of, for injection, B., 653.
tungstate, effect of pressure on phase equilibria of, A., 447, 1322.
catalysis of decomposition of hydrogen peroxide by, A., 454.

Sodium organic compounds:—

Sodium benzenediazoate, reactions of, A., 78.
 cyanamide, synthesis of, under pressure, A., 179.
 ethoxide, reaction of, with ethyl iodide, A., 1082.
 on γ -halogenocrotonic esters, A., 1105.
 ethoxydiphenylmethyl, and its oxidation, A., 345.
 dinitrophenoxide as metabolic stimulant, A., 655.
 triphenylboron, conductance of ether solutions of, A., 1462.
 triphenylgermanide, electrolysis of, in liquid ammonia solutions, A., 506.
m-4-xylyloxyde, reaction of, with alkyl iodides, A., 453.
Disodium tri- α -naphthylboron, conductance of ether solutions of, A., 1462.
Sodium determination:—
 determination of, colorimetrically, A., 54, 185.
 as the magnesium uranyl acetate, A., 1215.
 micro-colorimetrically, A., 1215.
 in potassium salts, by uranyl acetate method, B., 627.
 in blood, A., 509.
 volumetrically, A., 1044.
 in human red blood-corpuscles, A., 372.
 in oilfield water, with zinc uranyl acetate, B., 432.
Sodium-cellulose, A., 1074.
Sodium ions, conductivity and equilibrium of, with silver and chlorine ions in gelatin solution, A., 825.
Sodium-tungsten bronzes, A., 1065.
 structure of, A., 813.
Soils, structure of, A., 61 ; B., 163, 243, 371.
 influence of moisture content on, B., 243, 645.
 and cation exchange, B., 1009.
 influence of decomposition of organic matter on, B., 38.
 stability of, B., 740.
 structural stability of aggregates of, B., 645.
 formation of, in Siam, A., 1220.
 variations in chemical composition of, B., 1009.
 chemistry of profiles of, B., 964.
 clay-pan formation in profiles of, B., 686.
 genetic analysis and morphology of profiles of, B., 964.
 mapping of, in Württemberg, B., 197.
 profile diagrams for, B., 323.
 critical zones and availability of adsorbed ions in, B., 1107.
 field tests of mechanical composition and texture of, B., 243.
 determination of temperature of, field apparatus for, B., 1157.
 sub-surface treatment of, with chloropicrin and carbon disulphide for nematode control, B., 965.
 crumb formation in, and interaction of water and clay, B., 36.
 relationships between properties of, and clay complex, B., 71.
 effect of rainfall on properties of, A., 61 ; B., 646.
 determination of physical properties of, B., 198.
 adsorption complex and physical properties of, B., 164.
 exchangeable magnesium and physical properties of, B., 421.
 physics of, B., 163.

Soils, physical measurements on, B., 243.
 redox potential of, B., 371, 646.
 oxidation-reduction potential of, B., 71.
 anion exchange in, B., 36.
 exchange of cations in, B., 71.
 exchangeable cations in plants and, B., 967.
 relations between sticky point and exchangeable ions in, B., 1156.
 total exchange capacity and absorption of ammonium and potassium by, B., 1156.
 determination of adsorptive capacity of, B., 965.
 mineral adsorption complex in, B., 1060.
 effect of magnesium chloride on absorbing power of, B., 565.
 adsorption of anions by, B., 71.
 adsorbed and dissolved cations in, B., 198.
 and their constituents, adsorption of gases by, B., 1010.
 oxygen absorption and carbon dioxide production in, B., 1010.
 adsorption of potassium by, B., 1107.
 absorption of selenium from, by plants, B., 688, 917.
 hydrogen and iron in adsorption complex of, B., 198.
 dispersion of, for mechanical analysis by ammonium carbonate method, B., 565.
 effect of culture on dispersion coefficient of, B., 36.
 influence of exchangeable magnesium on dispersion properties of, B., 421.
 dispersing action of sodium ions on, B., 71.
 osmotic ratio of, in relation to plant distribution, A., 671.
 heat of wetting of, B., 71.
 rate of percolation of water through, B., 374.
 infiltration capacity of, B., 917.
 effect of manuring on conservation of water in, B., 324.
 potassium in irrigating waters for, B., 373.
 salt content of irrigating waters on, B., 243.
 surface pressure, sorption, and resistance to wetting of, B., 819.
 research on drainage of, B., 36.
 determination of total surface area of, B., 197.
 influence of manuring on permeability of, B., 373.
 lysimeter experiments on, B., 470.
 effect of burning of, B., 964.
 chemistry of, B., 420.
 corrosion of metals in, B., 191.
 protection of pipes from corrosion by, B., 1048.
 periodic fluctuations in constituents of, B., 470.
 acidity of, reactions producing, B., 163.
 effect of water on, B., 1108.
 physiological significance of, B., 164.
 Comber's test for, B., 36.
 relation of fertility and exchangeable acidity of, B., 1059.
 reaction of, and ammonia content, B., 687.
 variations in, B., 513, 1108.
 influence of fertilisers on, B., 866.
 effect of liming on, B., 965.
 effect of manuring on, B., 324.
 influence of ammonium salts on acid functions of, B., 371.
 p_H of, and crop yields, B., 72.

Soils, p_H of, effect of repeated nitrogen manuring on, B., 73.
 relation between, and plant distribution, A., 132.
 seasonal variations in, B., 513.
 p_H as criterion of reaction relationships of, B., 513.
 buffer action of, B., 198.
 influence of sorption complex on fixation of ammonium compounds in, B., 687.
 effect of ammonium compounds on, B., 245.
 effect of sunlight on nitrification of ammonium salts in, B., 740.
 arsenic content of, A., 61.
 base exchange in, B., 646.
 decomposition of base-exchange compounds in, by acids, B., 917.
 calcium in, B., 865.
 distribution of "calicoles" and "calcifuges" and exchangeable calcium in, B., 164.
 formation of secondary calcium carbonate in, B., 163.
 carbon-nitrogen ratio in, A., 549.
 influence of temperature on, B., 1059.
 and nitrogen accumulation in dry climates, B., 819.
 effect of climate on clay content of, B., 964.
 colloids of, A., 548.
 laws of behaviour of, B., 36, 740, 1107.
 composition and properties of, B., 470.
 base-exchange and related properties of, B., 421.
 sorption of liquids by, B., 36.
 fixation of phosphates by, B., 421.
 peptisation analysis of, A., 445.
 determination of free iron oxide in, B., 645.
 so-called colloidal complexes of, B., 917.
 saturation conditions of colloid complex in, B., 865.
 fertilisers for, B., 324.
 chemistry of action of fertilisers in, B., 325.
 influence of artificial fertilisers and stall manures on productivity of, B., 515.
 influence of fertilisers on nitrogen and carbon cycles in, B., 282.
 fertiliser effect of wood burning on, by "Chitene" system, B., 116.
 fertilising effect of aluminium, manganese, etc., introduced into adsorptive complex of, B., 967.
 behaviour of phosphate fertilisers in, B., 602.
 growth-substances in, A., 672.
 decomposition and movement of herbicides in, B., 1012.
 humate formation in, B., 1106.
 "Huminsäure" in, B., 36.
 supply of humus to, B., 514.
 humus layer of, B., 1156.
 use of humus-clay mixtures for improvement of, B., 821.
 lignin-humic complex content of, B., 115.
 behaviour of ferrous iron in, B., 37.
 decomposition of lignin and formation of organic matter in, B., 372.
 liming of, B., 965.
 effect of elements on response of, to liming, B., 1156.
 relation between lime content and p_H of, B., 470.
 lime requirements and types of, B., 164.
 influence of potash fertilisers on lime status of, B., 1109.

- Soils, base-exchange properties of magnesium silicate in**, B., 1107.
manuring of, B., 1060.
 in dry climates, B., 515.
 field tests on, B., 324.
 physical chemistry of tillage and manuring of, B., 471.
 mineral content of, and its relation to plants, B., 422.
 return of minerals by plants to, B., 967.
 mulching of, with clover chaff, B., 245.
 movement of nitrates in, B., 38.
 influence of nitrates and organic materials on nitrate levels of, B., 421.
 effect of rate of decomposition of organic materials on nitrification in, B., 866.
 denitrification of, in sunlight, B., 38, 602.
 influence of carbon : nitrogen ratio in, on absorption of nitrogen by plants, B., 38.
 nitrogen changes in, B., 323.
 fixation of nitrogen in, B., 918.
 by non-symbiotic bacteria, B., 1009.
 by fungi and *Actinomyces*, B., 514.
 by legumes, B., 166, 646.
 effect of molasses on, B., 740.
 effect of ammonium sulphate on nitrogen content of, B., 820.
 nitrifying power and productivity of, B., 325.
 organic matter in, B., 198.
 and crop rotation, B., 917.
 biology of, B., 36.
 rôle of, in plant nutrition, B., 37, 38, 165, 967.
 oxidation of, B., 37.
 decomposition of, B., 820.
 influence of manganese on oxidation of organic matter and release of nutrients from, B., 967.
 phosphates in, B., 688, 741.
 extraction of phosphates of, B., 1059.
 fixation of phosphates in, B., 688.
 influence of organic matter on, B., 1107.
 liberation of phosphates adsorbed by, B., 36.
 distribution of available phosphates in, B., 165.
 influence of humates on mobility of phosphates in, B., 566.
 decomposition of phosphates in, by potassium oxalate, B., 72.
 phosphate requirement and reaction of, B., 966.
 phosphate content of nitric acid extracts of, B., 966.
 phosphato retention by aluminosilicate colloids in, B., 1107.
 action of phosphate rock in, B., 566.
 availability of iron and aluminium phosphates and their salts in, B., 72.
 inorganic phosphates in green plant tissue and phosphate availability in, B., 741.
 fixation of manurial phosphates in, B., 37.
 influence of base saturation on availability of native, soluble, and rock phosphates in, B., 688.
 distribution of phosphoric acid in, and its intake by plants, B., 198.
 stratified distribution of phosphoric acid in, B., 688.
 solubility and distribution of phosphoric acid in, B., 198.
 fixation of phosphoric acid in, B., 565.
 phosphoric acid and potash in grass and, B., 1011.
- Soils, effect of bases on fixation of phosphorus by**, B., 198.
 phosphorus penetration and availability in, B., 565.
 mechanical composition and root-soluble potassium of, B., 740.
 distribution of potassium in, and its assimilability by plants, B., 1107.
 effect of lime and neutral calcium salts on solubility of potassium in, B., 602.
 conversion of non-replaceable potassium in, B., 865.
 effect of potassium : nitrogen ratio in, on cereal plants, B., 72.
 electrolysable potassium and phosphorus in, B., 244.
 effect of lignin on decomposition of proteins in, B., 965.
 fixation of radium in, by plants, B., 73.
 exhalation of radon from, A., 191.
 salts in, and crops, B., 244.
 selenium in, B., 513.
 action between soluble silicates and, B., 565.
 effect of water on absorbed sodium in, B., 1108.
 leaching adsorbed sodium from, by steam, B., 36.
 action of sodium chlorate on, B., 821.
 reversion of superphosphates in, B., 116.
 decomposition of urea in, B., 602.
 moisture in, B., 198.
 meter for, B., 917.
 distribution of, under isolated trees, B., 163.
 determination of moisture equivalent of, by centrifuge and suction methods, B., 965.
 degree of podsolisation in, B., 1106.
 "single value" properties of, B., 1156.
 testing of, by field trials and seedling methods, B., 1060.
 study of fertility of, B., 167.
 stimulation of seed germination by, B., 689.
 influence of, on plant growth, B., 867.
 growth of plants and polar sorption in, B., 867.
 effect of rarer elements in, on plant growth, B., 1109.
 deep cultivation of, B., 865.
 efficiency of roots and tops of plants in protection of, from erosion, B., 1110.
 relationships between plant growth, nutrient ratios of manures, and, B., 1109.
 drought in, and respiration of plants, B., 820.
Azotobacter in, B., 967.
Azotobacter and nitrifying bacteria in, B., 918.
 bacteria of autochthonous microflora of, B., 740.
 salt selection of bacteria in, B., 324.
 bacterial activity in, B., 1059.
 nitrifying bacteria in, B., 372, 514.
 bacteria which oxidise thiosulphate in, B., 470.
 effect of *B. mycoides* on ammonification in, B., 687.
 microbial activity in, B., 1156.
 effect of colloids on micro-organisms in, B., 1010.
Rhizobium meliloti and *trifolii* in, B., 691.
 protozoa in, A., 124.
 aluminium as index of contamination of, B., 777.
 arsenic toxicity in, B., 420.
 nutrient deficiencies in, and plant diseases, B., 167.
- Soils, control of damping-off, by electrical pasteurisation of**, B., 567.
 treatment of, for control of finger and toe disease, B., 74.
Fusarium diseases and, B., 471.
 eradication of wart disease in, by chemical sterilisation, B., 968.
 partial sterilisation of, B., 374.
 sterilisation of, with steam, B., 198.
Soils, acid, growth of plants in, B., 867.
 effect of herbage plants on reaction of, B., 245.
 effect of lime and phosphate on nitrification in, B., 1010.
 liming and calcium : magnesium ratio in, B., 867.
 humus, liming of, B., 965.
 acidic, effect of herbage plants on reaction of, B., 777.
 upland, response of grass and clover to treatment on, B., 777.
 Agro Pontino, improvement of, B., 71, 1060.
 Alberta, black and grey, quality of wheat on, B., 1160.
 alkali, effect of salts on physico-chemical properties of, B., 71.
 nitrification in, B., 1156.
 of Iowa, B., 1156.
 available potassium in, B., 1010.
 of Punjab, reclamation of, B., 115.
 virgin black, reclamation of, B., 163.
 analysis of, by ammonium carbonate extraction, B., 1108.
 alkalis, action of irrigation on, B., 372.
 allitic and siallitic, B., 964.
 arable, clay complex of, B., 115.
 biological decomposition of farm manures in, B., 964.
 nitrification of stall manures in, B., 324.
 sterilisation of, B., 323.
 determination in, of water- and citric acid-soluble potassium, B., 373.
 Australian, carbon : nitrogen ratios of, B., 1059.
 basaltic, in Fukuoka Prefecture, A., 1348.
 basic, effect of moistening and drying on solubility of phosphorus in, B., 865.
 black turf, nature and origin of, B., 964.
 bog and podsol, composition and mechanical fractions of, B., 1156.
 Brazilian, phosphates in, B., 72.
 bush-sick, misuse of lime and, B., 39.
 calcareous, availability of phosphates in, B., 865.
 relation of alkalinity to availability of phosphates in, B., 820.
 determination in, of available phosphates, by electrolysis, B., 72.
 containing calcium carbonate and sulphate, determination in, of exchangeable bases and *S* value, B., 1059.
 carbonate, exchange reactions in, salinised with chlorides and sulphates, B., 421.
 determination in, of adsorbed calcium, B., 72.
 on carboniferous limestone in Somerset and Derbyshire, A., 324.
 of Caucasian Black Sea coast, B., 964.
 of the lower Charente, A., 191.
 of Cheshire, Derbyshire, and Somerset, A., 324.
 chestnut, physical properties and exchangeable bases of, B., 1107.
 Chicago, B., 421.
 clay, drying and swelling of, on arable land, B., 565.

- Soils, clay, hardening of, (P.), B., 919.
 fixation of phosphates in, by oxides, B., 688.
 of Transvaal, A., 191.
 from clay-with-flints in Picardy, B., 740.
 coastal plain, effect of acidity on availability of nutrients in, B., 117.
 amphoteric nature of, B., 471.
 of coastal prairies of Louisiana, B., 36.
 cotton, of Barberton, S. Africa, nitrates in, B., 866.
 cotton field, B., 420.
 cove, of the Black Rock forest, physical properties of, B., 1156.
 cultivated, mobilisation of plant nutrients in, B., 116.
 Dahlem, effect of cultivation and manuring on physical condition of, B., 324.
 of Death Valley, California, B., 964.
 of "Dismal Swamp," B., 242.
 Dutch, potash-bearing minerals in, B., 965.
 East African, B., 964.
 classification and mapping of, B., 1059.
 of East Anglia, B., 777.
 Egyptian, deterioration in, B., 687, 820.
 field, retaining moisture in, (P.), B., 423.
 Finnish, liming of, for growth of leguminous fodder crops, B., 1159.
 Florida citrus, concentration and movement of nitrates in, B., 38.
 forest, B., 1059.
 properties of, B., 1156.
 pot-culture tests for fertility of, B., 1157.
 effect of forest clearing on, B., 72.
 calcium and magnesium losses from cultivation of, B., 372.
 nitrogen transformation in, B., 866.
 periodic cycle of phosphorus in, B., 372.
 reaction of, seasonal variations in, B., 197.
 grey, degradation and regradation of, B., 197.
 longleaf pine, effect of fires on composition of, B., 37.
 of Upper Peninsula, A., 61.
 forest and humus, determination of acidity of, B., 164.
 French, colloids in, B., 565.
 of Frunze Zondl Experimental Station, B., 687.
 German, conservation of water in, B., 420.
 ground-water-free, classification of, B., 565.
 gley, formation of, B., 163, 686.
 in granitic areas, bearing lime-loving plants, B., 115.
 greenhouse, eradication of nematodes in, B., 422.
 greywacke and slate, transport of components of, A., 843.
 Grundy silt, effects of lime on p_H and base-exchange complex of, B., 513.
 Grundy silt loam, effect of liming on nitrification in, B., 918.
 Hawaiian, phosphate fixation in, B., 72, 373.
 easily-soluble nutrients in, B., 471.
 non-calcareous, sorption of phosphates by, B., 966.
 heavy, nutrients in, B., 1107.
 high-lime, effects of fertilisers on nitrification in, B., 1010.
 humus, in forests, B., 1106.
 ideal, sorption in, A., 1316.
 Illinois, response of, to limestone, B., 917.
- Soils, Illinois, solubility of phosphorus in, B., 199.
 Indian, diurnal variation of moisture in, during clear season, B., 777.
 Indiana, surface and sub-, nitrogen, phosphorus, and potassium requirements of, B., 515.
 of Indo-China, mechanical analysis of, B., 243.
 infertile, from rocks high in magnesium, chromium, and other metals, B., 645.
 Iowa, base-exchange in, B., 421, 1009.
 determination of p_H of, with glass and quinhydrone electrodes, B., 917, 1059.
 Italian, fertilisers for, B., 373.
 of Italian Somaliland, B., 687.
 Italian volcanic, A., 191.
 Japanese, catalytic action of, B., 371.
 iodine content of, A., 191; B., 1080.
 manganese compounds in, B., 115.
 of Kisantu (Inkisi), composition, structure, and lime requirement of, B., 565.
 Kwanto loam, origin of, B., 1059.
 lateritic, effect of rain and maturity on properties of, in Mauritius, B., 242.
 light-chestnut, of Valuiskaja Station, B., 687.
 Lima, toxic gases in sub-soils of, B., 71.
 loam, kaolin, clay, and, B., 565.
 of the London tertiaries near Harrow, A., 1220.
 long-leaf pine, effect of annual grass fires on, B., 964.
 low-moor, virgin and cultivated, formation of nitrates on, B., 514.
 low-peat, effect of water on nitrification in, B., 115.
 lucerne-sick, rôle of bacteriophage in, B., 742.
 Malayan, B., 35.
 bacterial numbers in, A., 257.
 Manitoba, algae in, A., 661.
 number of nematodes in, B., 243.
 virgin, micro-organisms in, B., 964.
 meadow, phosphate fertilisers on, B., 372.
 Michigan, nitrogen fixation in, B., 917.
 mineral, physical chemistry of cation exchange in, B., 1080.
 Minnesota, calcium and magnesium carbonates in, B., 281.
Molinia, effect of herbage plants on reaction of, B., 777.
 moor, colonial phosphoric acid balance in, B., 1010.
 determination in, of nutrients, B., 165.
 Natal, mechanical analysis of, B., 243.
 New Zealand, bases in, B., 687.
 newly-cultivated, manuring of, B., 515.
 non-calcareous, action of alkali salts and calcium chloride on, B., 371.
 Norfolk sand, rate of decomposition of organic matter in, B., 965.
 of N.E. Sauerland, weathered Devonian and carboniferous, B., 242.
 of N. Shropshire, B., 242.
 Ohio, corrosive properties of, B., 1156.
 orchard, seasonal variation of oxidation-reduction potential of, B., 421.
 organic, epinastic response of, B., 1061.
 Palatinato, magnesium in, B., 244.
 Palouse silt loam, transformation of organic matter in, B., 1156.
 peat, ion exchange in, B., 1107.
 carotenoid content of, A., 1180.
 muck, and mud deposits, composition and agricultural uses of, B., 820.
- Soils of Pitch Pine Plains of Southern New Jersey, B., 1009.
 podsol, chemistry of, B., 964.
 influence of calcium cyanamide on nitrification in, B., 687.
 denitrification in, B., 687.
 Appalachian upland, B., 242.
 microbiology of, B., 1010.
 podsolised, of forest-steppe region, removal and accumulation in, B., 1106.
 determination in, of lime requirement, B., 686.
 Polish, dynamics of, B., 964.
 prairie, relation of root distribution to organic matter in, B., 516.
 of Premanych, adsorption complex of, B., 164.
 rendzina, B., 964.
 of Salt Plain, Oklahoma, barrenness of, B., 164.
 saltpetre solontschak, in Middle-Asia, B., 1106.
 sandy, plant associations and characterisation of, B., 1108.
 Fox, effect of fertilisers, etc., on, B., 1108.
 of Hungarian lowlands, potassium and phosphorus in, B., 324.
 of Scotland, B., 777.
 Scottish moorland, tree growth on, B., 371.
 of Sierra Leone, B., 865.
 silt, action of fertilisers on physical properties of, B., 244.
 mineralogy of, A., 603.
 sludge, from Baltic and North Seas, B., 515.
 solonetz, effect of erosion on properties of, B., 819.
 effect of irrigation on, B., 71.
 changes in soil microflora during desalinisation of, B., 164.
 chemical amelioration of, B., 71.
 artificial, effect of gypsum on, B., 164.
 of North Dakota, morphology and genesis of, B., 197.
 of South Australia, B., 565.
Azotobacter in, B., 820.
 S. Florida, effect of copper, manganese, and zinc sulphates on, B., 115.
 S. German, iodine in, B., 917.
 steppe, and plants thereon, B., 372.
 alkalisation of, B., 244.
 sub- and surface, available phosphorus and potassium in, B., 515.
 Sudan, B., 421.
 sugar-beet, determination in, of humus, B., 646.
 sugar-cane, B., 868.
 flooding of, B., 868.
 salinity of, B., 868.
 and magnesium toxicity, B., 868.
 effect of ammonium sulphate on, B., 820.
 use of lime-salt on, B., 820.
 available phosphate in, B., 917.
 biochemistry of, B., 865.
 of British Guiana, B., 868.
 of Mauritius, B., 1156.
 Trinidad, exchangeable potash in, B., 917.
 surface, salinity in, and irrigation, B., 72.
 swamp, effect of cane molasses on, B., 116.
 Swedish, phosphate content of, B., 965.
 takyr, B., 420.
 Tama silt, effect of lime on availability of phosphate in, B., 1010.
 of Tatra mountains, composition of organic matter and nitrogen compounds in, B., 968.

- Soils for tea, B., 1009.
 in China, Formosa, and Japan, B., 1009.
 of Teindland State Forest, B., 420.
 "terra rossa," of Emilia, B., 242.
 of tobacco regions of U.S.S.R., B., 38.
 of Transcaucasia, B., 687.
 of Transcaucasia and Turkestan, irrigated, B., 164.
 Trinidad, manganese in, B., 917.
 tropical, increase of acidity with depth in, B., 565.
 microbiology of, A., 257.
 of the Uchte moorland, utilisation of, B., 1107.
 Uganda, exchangeable calcium and potassium in, B., 819.
 of U.S.S.R., exchangeable cations in, B., 1156.
 organic matter of, B., 72.
 fertility of deep horizons of, B., 1107.
 research on chemistry of, B., 71.
 microbiology of, B., 164.
 southern steppe, *Azotobacter* in, B., 1106.
 of United States, occurrence of selenium in, B., 1010.
 of middle Ural forest steppes, B., 964.
 of the Valdai Highlands, buffer properties of, B., 198.
 water-logged, nitrification of calcium cyanamide in, B., 514.
 biochemistry of, B., 281.
 West Indian, B., 1009.
 West Norway, fixation of phosphoric acid in, B., 565.
 wind-blown, bacteria of, B., 470.
 bacterial flora of, B., 964.
 Wisconsin Drift, effect of fertilisers on crops on, B., 1011.
 Soils, field tests and sampling of, B., 243.
 instrument for sampling of, B., 565.
 analysis of, B., 71.
 by oxalate method, B., 244.
 interpretation of results in, B., 37.
 mechanical analysis of, B., 243.
 by hydrometer method, B., 645.
 by von Krudener's method, B., 198.
 by pipette and hydrometer methods, B., 71.
 dispersion for, B., 243.
 dispersion of clay colloids in, B., 243.
 expression of results of, B., 565.
 nomograms for use in, B., 1059.
 mineralogical analysis of, B., 243.
 detection of lack of uniformity of, in field trials, B., 37.
 determination in, of acidity, P., 421, 646.
 of alkalis, B., 1059.
 of alumina and silica, B., 164.
 of aluminium, B., 865.
 of adsorbed bases, B., 687.
 of exchangeable bases, B., 965.
 of base-absorbing capacity, B., 71.
 of boric acid, B., 820.
 of calcium, B., 1059.
 of soluble calcium and magnesium, B., 37.
 of calcium and magnesium carbonates, B., 740.
 of carbon, B., 470, 965, 1108.
 by wet combustion, B., 917.
 of organic carbon, B., 1108.
 of organic carbon and nitrogen, B., 1157.
 of exchange capacity, with copper, B., 965.
 of fertiliser requirements, B., 198, 324, 515, 566, 966.
 of humus, B., 646.
 Soils, determination in, of pH , B., 777.
 with antimony electrode, B., 421.
 with quinhydrone method, in the field, B., 865.
 of iodine, B., 740.
 of lime requirement, by graphs, B., 918.
 of molybdenum, A., 1179.
 of nitrogen, B., 514, 820.
 by fumeless digestion, B., 1009.
 by oxidation methods, B., 1009, 1108.
 of nitrogen requirement, B., 36.
 of nutrients, by *Aspergillus* method, B., 1157.
 by field and Mitscherlich methods, B., 421.
 of assimilable nutrients, B., 688.
 of available nutrients, by Mitscherlich and Neubauer methods, B., 1060.
 by Sigmond's method, B., 688.
 of citric acid soluble nutrients, by Dyer's method, B., 244.
 of nutrient requirement, by *Azotobacter* methods, B., 165.
 of phosphates, by dialysis and Truog's extraction method, B., 865.
 of phosphate requirement, B., 515.
 of assimilability of phosphates, B., 740.
 of available phosphate and potassium with *Aspergillus oryzae*, B., 1108.
 of phosphoric acid, colorimetrically, B., 198.
 by Dirks' method, B., 37.
 of phosphoric acid and potassium requirements, by micro-fertilisation method, B., 72.
 of available phosphorus, B., 372.
 by *Cunninghamella* method, B., 198.
 of potassium, B., 514, 966, 1157.
 sedimentarily, B., 740.
 of assimilable potassium, B., 37.
 of potassium requirement, by *Azotobacter* method, B., 688.
 by Dirks' method, B., 865.
 with the "kalimeter," B., 546.
 of sand, B., 115.
 Soil extracts, suction apparatus for preparation of, B., 565.
 aqueous analysis of, B., 198.
 influence of filtration on colorimetric determination of pH of, B., 324.
 determination in, of magnesium, B., 164.
 Soil solutions, production of, by water displacement and von Wrangell's method, B., 372.
 extraction of, and root-soluble nutrients, B., 324.
 determination in, of potassium, B., 688.
 Soil suspensions, conductivity of, and fertility, B., 281.
 coagulation of, by aluminium and iron salts, B., 281.
 catalytic effect of platinum and gold in, B., 371.
 settled, volume of, in water, B., 645.
 Sol-gel transformations, A., 822.
 Solanine, and its hendeca-acetate, A., 736.
 haemolysis by, A., 881.
Solanum dulcamara, pigment from, A., 983.
Solanum melongena. See Egg-plant.
Solanum xanthocarpum, constituents of, A., 796.
 Solar spectrum. See under Sun.
 Solarisation, distribution of nuclei with, A., 458.
 Solder, recovery of, (P.), B., 556.
 alloy for, (P.), B., 274.
 flux-cored, (P.), B., 1099.
 Solder, hard, (P.), B., 414.
 phosphor-copper, (P.), B., 505.
 silver, manufacture of, (P.), B., 999.
 soft, flux for, (P.), B., 315.
 penetration of steel by, B., 550.
 determination in, of antimony, B., 64.
 Soldering, of metallic articles, (P.), B., 556.
 Soles, rubber, cold-vulcanisation process for attachment of, B., 862.
 cement-receptive backing for, (P.), B., 197.
 Solids, structure of, A., 688.
 classification of, (P.), B., 481.
 recovery of, from emulsions, solutions, and suspensions, (P.), B., 834.
 separation of, (P.), B., 338.
 from liquids, B., 289; (P.), B., 1075, 1076.
 from liquid mud, (P.), B., 787.
 removal of liquid from suspensions of, (P.), B., 482.
 treatment of, with gases, (P.), B., 1076.
 apparatus for, with liquids, (P.), B., 532.
 drying of, B., 209, 221, 227, 1025, 1121, 1142, 1149; (P.), B., 531, 1073.
 distribution of, (P.), B., 1121.
 grading of, (P.), B., 531.
 grinding of, (P.), B., 289.
 measurement of colour of, B., 1121.
 molecular rotation in, A., 683.
 chain mechanism in, A., 1083.
 stereochemistry of, A., 1449.
 optical properties of, A., 1310.
 surface conductivity at interfaces of, with liquids, A., 705.
 measurement of magnetic susceptibility of, at high temperatures, A., 321.
 effect of electric field on thermal conductivity of, A., 691, 692.
 measurement of specific heat of, at high temperatures, A., 924.
 theory of, at high temperatures, A., 1312.
 thermal expansion of, A., 918.
 compressibility of, A., 816.
 effect of pressure on dissociation of, A., 168.
 ebulliometric determination of amount adsorbed on, A., 876.
 rigidity of adherence of, along interfaces, A., 1071.
 surface tension of, A., 160.
 surface tension and molecular structure of, A., 284.
 surfaces of. See under Surfaces.
 diffusion of, A., 24.
 diffusion and reactions in, A., 841.
 influence of adsorbed films on potential difference between aqueous solutions and, A., 442.
 inner equilibrium in, A., 16, 811.
 reaction rates at interfaces of, with liquids, A., 829.
 free energy of, at high temperature, A., 584.
 determination of ignition temperatures of, B., 707.
 explosions of, B., 879.
 decomposition of, at increasing temperatures, A., 308.
 reactions of, at ordinary temperature, A., 716.
 at high temperatures, A., 944.
 reactivity of, A., 180.
 reactivity during phase changes in, A., 944.
 reactivity and catalytic activity of, in transition states, A., 1086.
 conveyance of, by fluid suspension, B., 833.

Solids, amorphous, dipole rotation in, A., 685.
 fusible, disintegration of, (P.), B., 1074.
 heat-sensitive, recovery of, from solutions and emulsions, (P.), B., 482.
Solid solutions. See under Solutions.
Solid state, continuity of, with liquid state, A., 1062.
Solidification, fractional, apparatus for, A., 840.
Solubility, A., 818.
 relation of, to adsorption and the solvent, A., 442.
 and surface tension, A., 1315.
 influence of hydrolysis on, A., 929.
 of amino-acids in water, A., 695.
 of amino-acid derivatives in alcohol-water mixtures, A., 695.
 of non-electrolytes, A., 441, 1067.
 of organic acids, effect of polarity on, A., 695.
 of salts in liquid ammonia, A., 818.
 of sparingly soluble acids and bases, influence of hydrophilic colloids on, A., 929.
 of components of ternary systems, A., 929.
 in salt of saturated fatty acids, A., 1068.
Solubility product, theory of, A., 929.
Solusalsvarsan, avidity value of, A., 120.
Solutes, interaction of, with solvents, A., 699.
 molecular polarisation of, A., 1056.
 at infinite dilution, A., 927.
 apparent volumes and apparent compressibilities of, in solution, A., 1456.
Solutions, statistical theory of, A., 823.
 constitution and optical properties of, and of glasses, A., 1200.
 volume changes in, on neutralisation, A., 579.
 thermodynamics of, A., 165, 583.
 molecular interaction and thermodynamic properties of, A., 165.
 adsorption from, A., 28.
 surface tension of, A., 819.
 surfaces of contact between, A., 1325.
 velocity of reaction in, A., 828.
 aqueous, apparatus for continuous extraction of, A., 189.
 infra-red reflecting power of, A., 1300.
 heat capacity of, A., 705.
 f.p. of, A., 30.
 vapour pressure of, A., 694.
 influence of concentration and solute on compressions of, A., 443.
 viscosity of, A., 693.
 rate of rise of, in porous bodies, A., 29.
 formation of compounds in, A., 162.
 binary, dilute, dielectric behaviour of, A., 1318.
 coloured, electrometric determination of acidity of, A., 52.
 concentrated, theory of, A., 304.
 salt effect in, A., 935.
 of small concentrations, law of mass action for, A., 702.
 dilute, Nernst's electrochemical theory of, A., 169.
 electrical conductivity of, A., 935.
 electrolysis of, A., 585.
 specific conductance of, A., 449.
 electrolytic, A., 13, 302.
 properties of, A., 705.
 compressibility of, A., 820.
 ionic, X-ray diffraction in, A., 162.
 molecular arrangement and X-ray diffraction in, A., 443, 931.
 liquid and solid, equilibria between, A., 1461.

Solutions, mixed, activity coefficients of, A., 302.
 non-aqueous, conductance of, A., 1462.
 neutral salt action in, A., 1461.
 non-electrolytic, heats of dilution and osmotic pressures of, A., 1071.
 partially miscible, equations for free energy of mixing of, A., 1461.
 polar, frictional dispersion of, with short electric waves, A., 1318.
 seeded, supersaturation and crystal formation in, A., 26.
 solid, fusion curves of, A., 582.
 thermodynamics of, A., 583.
 of metals, A., 158.
 supercooled, theory of, A., 24.
 supercooled, decomposition of, B., 152.
 ternary, surface tension of, A., 1316.
 true, anomalous diffusion in, A., 928.
 spectrographic analysis of, A., 52.
Solvation, and surface tension, A., 1316.
 and equation of state of dissolved substances, A., 1076.
 thickness of solvate sheath in, A., 1201.
Solvents, B., 714, 1151.
 trade names and composition of, B., 239.
 production of, B., 714.
 by fermentation of carbohydrates, (P.), B., 696.
 graphical correlation of data on extraction by, B., 753.
 recovery of, B., 91.
 plant for, (P.), B., 482.
 automatic control in, B., 1128.
 by condensation, B., 714.
 in plastics and allied industries, B., 1036.
 in rubber industry, B., 1058.
 apparatus for treatment with, (P.), B., 1076.
 degreasing with, B., 1003.
 aliphatic amines for use as, B., 893.
 from coal tar, B., 598.
 decalin, hexalin, methylhexalin, and tetralin as, B., 1036.
 glycol ethers for use as, (P.), B., 618.
 from secondary alcohols and ketones, B., 714.
 tertiary ethers for use as, (P.), B., 715.
 dielectric constant of, A., 1056.
 action of, A., 443, 1192.
 interaction of, with solutes, A., 699.
 for lacquers, B., 1151.
 apparatus for comparison of rates of evaporation of, B., 860.
 dry-cleaning, (P.), B., 59, 185.
 recovery of, (P.), B., 847.
 from sludge, (P.), B., 51.
 hydrocarbon, determination in, of mercaptans, B., 484.
 non-aqueous, acid catalysis in, A., 1209.
 non-ionising, detection of double decomposition in, by optical activity of ammonium salts, A., 202.
 organic, vapour-liquid equilibria in systems of, B., 584.
 volatile, recovery of, B., 137.
 by adsorbents, B., 1036.
 "Schlieren" test for, B., 296.
 determination in, of water, B., 395.
Somatoids, A., 1072.
Sommerfeld's constant, A., 1187.
Soot, determination in, of arsenic, A., 184.
Sophocarpidine, isolation of, from foliage of *Sophora pachycarpa*, A., 97.
 identity of, with matrine, A., 635.
Sophocarpine, isolation of, from foliage of *Sophora pachycarpa*, A., 97.

Sophora alkaloids, A., 97, 635, 872.
Sophora alopecuroides, alkaloids of, A., 635.
Sophora flavescens, alkaloids of, A., 635.
Sophora japonica, heteroside of fruits of, A., 1041.
Sophora pachycarpa, alkaloids of, A., 97.
Sophoricoside, A., 1041.
Sophoridine, reduction of, A., 97.
Sorbic acid, catalytic hydrogenation of, A., 175.
 methyl ester, autoxidation of, A., 731.
Sorbitol, occurrence of, in grape wines, B., 871.
 food value of, A., 112.
 in Polish fruits and fruit wines, B., 43.
 detection of, in wines, B., 203.
Sorbitols, substituted, structure of, A., 1222.
Sorbose, and its acetyl derivatives, methylation of, A., 200.
 absorption of, by intestines, A., 522.
d-Sorbose, formation of, from *d-fructose* and *d-psicose*, A., 735.
l-Sorbose, formation of, by bacteria, A., 1541.
 cyclohexylidene derivatives of, (P.), B., 1165.
Sorbus domestica, vitamin-C in fruits of, A., 1176.
Sorghum, duplicate pot cultures of, B., 167.
 iron in syrup of, B., 283.
 grain, vitamin-B₁ and -B₂ in, A., 415.
Sorghum saccharatum, A., 551.
 embryos, transformation of phosphoglyceric acid into pyruvic acid by, A., 897.
Sorrel, vitamin-C in, B., 171.
Sorrel juice, antiscorbutic action of, A., 546.
Sound, absorption of, in gases, A., 1062.
 determination of absorption coefficients of, A., 1219.
 velocity of, in anisotropic media, A., 20.
 in low-temperature liquids, A., 1197.
 in ultrasonic region, A., 155.
 high-frequency waves of, in Kundt's tube, A., 155.
 photographic recording of, (P.), B., 925.
 standing, tracing of, in gases, A., 1062.
Sound records, manufacture of, (P.), B., 110, 162.
 gramophone, manufacture of, from varnished cardboard, (P.), B., 988.
Sound waves, effect of, on electrolytes, A., 306.
"Sovprene". See Chloroprene.
Sows, breeding, iodine feeding of, B., 972.
Soya beans, composition, production, and uses of, in United States, B., 1115.
 extraction of, B., 559.
 feeding value of, and its supplementing by meat, B., 923.
 nutritive value of mixtures of egg powder and, for infants, B., 698.
 production of soft pork by feeding with, B., 972.
 improving flavour of, (P.), B., 923.
 casein from, B., 875.
 action of superheated water on glycinin from, A., 638.
 lecithin in. See Lecithin, soya.
 proteins of, A., 268; B., 826.
 amino-acids of, A., 1181.
 saponins and sapogenin from, A., 421.
 fermented paste from. See "Miso."
 American, and their oil, phosphatides in, B., 559.
 German, determination in, of fat, B., 774.
 germinating, catabolism of fat and phosphatides in, A., 795.
 determination in, of oil, B., 276.

Soya-bean cake, nutritive value of, B., 379.
 effect of, on butter and milk production, A., 884.
Soya-bean flour, detection of, B., 570.
Soya-bean meal, emulsification of insecticidal mineral oils with, B., 1158.
Soya-bean oil, solvent extraction of, B., 1003.
 drying qualities of, B., 31.
 colour of, B., 463.
 high-pressure hydrogenation of, B., 318, 416.
 effect of air, light, and plant enzymes on, B., 859.
 Tamari, composition of, B., 318.
Soya-bean plants, potassium fertilisers for, B., 245.
 influence of, on succeeding crops, B., 1110.
 effect of long and short day and shading on nodule development and composition of, A., 796.
 differentiation of strains of, A., 671.
 inoculated, effect of nitrate-nitrogen on carbohydrate metabolism of, A., 795.
 Manchou, fixation of atmospheric nitrogen by, A., 1414.
Spark-plugs, electrodes for, (P.), B., 507.
Sparrows, English, effect of gonadotropic hormones on sex characters in, A., 1032.
Spasmolytics, production of, (P.), B., 478, 749.
Spasmophilia and rickets, A., 1011.
Specific dynamic action, origin of, A., 113.
Specific heat. See under Heat.
Spectra, lines in, intensity of, and quantum theory, A., 556, 908.
 photographic measurement of, A., 1475.
 pressure displacement of, near series limit, A., 425.
 pressure-broadening of, A., 555.
 splitting of, by scattering in liquids, A., 564.
 strength of, in intermediate coupling, A., 556.
 width of, A., 1046.
 intercombination lines in, A., 271.
 ultimate lines and excitation potentials of, A., 272.
 perturbed series in, A., 799.
 Paschen-Back effect in multiplets in, A., 423.
 analysis of N-H bands in, A., 1298.
 calculation of optical terms in, A., 676.
 projection of photographs of, A., 57.
 distribution of colours in, A., 676.
 of exploded filaments in ultra-violet and Schumann regions, A., 1045.
 of diatomic molecules, isotopic shifts in, A., 805.
 excited by molecular rays, intensity of lines in, A., 1045.
 absorption, A., 679.
 measurements of, with prism spectrometers and thermo-elements, A., 805.
 instruments for measuring, A., 722.
 pressure displacement of lines in, A., 136.
 widening and displacement of lines in, A., 136.
 and double linkings, A., 1443.
 of adsorbed materials, A., 1052.
 of solutions in liquid ammonia, A., 1443.
 of complex salts, A., 427.
 of metallic and organic colloidal solutions and metal films, A., 1459.
 of polyatomic molecules, A., 914.
 containing ethyl and methyl radicals, A., 1188.

Spectra, absorption, of salts of transition elements, A., 427.
 continuous, of polyatomic molecules, A., 680.
 molecular, significance of, A., 561.
 absorption and luminescence, of weak solutions of dyes, A., 808.
 band, structure of, A., 1187.
 rotational structure of, A., 423.
 theory of transitions in, A., 1183.
 of deuterides and hydrides, isotope effect in, A., 676.
 determination of mass with, A., 144.
 diatomic, A., 562.
 rotation-vibration, A., 913.
 continuous, statistical distributions by, A., 1187.
 of flames and arcs, A., 272.
 electric and magnetic, in high frequency, A., 908.
 emission, photometric stage for study of, A., 188.
 of metallic salts, A., 1187.
 flame, use of, in quantitative analysis, A., 835.
 fluorescence, dependence of, on viscosity of the solvent, A., 807.
 infra-red, A., 281, 1189.
 and constitution, A., 912.
 absorption, and intramolecular isomerism, A., 564.
 of crystals, A., 145, 428, 1444.
 of organic liquids, A., 680.
 magnetic, viscosity bands in, A., 1310.
 molecular, and structure, A., 281, 561.
 relation of, to electrons in constituent atoms, A., 911.
 complex, vibrational analyses of, A., 427.
 multiplet, Dirac's vector model for, A., 1298.
 platinum-like, A., 1298.
 Raman. See Raman effect.
 Raman and Rayleigh, intensities of lines in, A., 281.
 α -ray, and Geiger-Nuttall law, A., 1440.
 β -ray, A., 804, 1048.
 of radioactive elements, A., 558.
 X-ray, measurement of wave-lengths in, A., 1292.
 electron transitions in, A., 1184.
 width of lines in, A., 3, 556.
 origin of $K\alpha$ satellites in, A., 138.
 $L\beta_2$ satellites in, A., 1439.
 influence of Auger effect on, A., 273.
 absorption, A., 801.
 higher series, A., 424.
 O-series, A., 424.
 ultra-soft, A., 909.
 K-X-ray absorption, of elements in cubic crystals, A., 139.
 resonance, absorption of exciting line in, A., 137.
 K-series, A., 1047.
 M-series, of elements niobium to silver, A., 1184.
 solar. See under Sun.
 stellar. See under Stars.
 ultra-violet, bands near, A., 1443.
 absorption, measurement of, A., 427, 1097.
 and ionisation potentials, A., 562.
 of binary liquid mixtures, A., 145, 428.
 of organic compounds, A., 145.
 spark, extension of short-wave limit of, A., 675.
 ultra-violet and visible, atmospheric extinction in, A., 424.
 vibrational, transition of, from XY_4 to XZ_4 , A., 681.

Spectra, vibrational, of organic compounds, isotope effect in, A., 1189.
Spectrographs, illumination of, A., 722.
 Lyman discharge tube for, A., 188.
 mass, compensation for magnetic field fluctuation in, A., 1342.
 automatic recording, A., 1342.
 mass and velocity, field combinations for, A., 188.
 vacuum, A., 1217.
Spectrographic analysis, A., 52, 141.
 with glass instruments, B., 551, 594.
 in near infra-red, A., 463.
 photometric, A., 58.
 quantitative, A., 719.
 applications of, A., 315.
Spectrography, X-ray, focussing in, A., 1475.
 applications of, B., 1001.
 spark, electrodes for, A., 1340.
Spectrometers, light source for, A., 57.
 mass, A., 1475.
 modified, A., 801.
 prism mirror, light absorption measurements with, A., 427, 561.
 X-ray, etched quartz crystals for, A., 57.
 reflexion powers of crystals for, A., 284.
 vacuum, A., 188.
 two-crystal moving-film, A., 57.
Spectrometry, micro-, A., 465.
Spectrophotometers, photo-electric, errors in, A., 465.
Spectrophotometric analysis, (P.), B., 926.
Spectrophotometry, without analysis of spectrum, A., 320.
 absorption, apparatus for, A., 320.
 divided-beam, microphotometer for, A., 320.
 ultra-violet, application of, to biological analysis, A., 906.
Spectroscopic analysis, A., 315, 1471.
 apparatus for, A., 320.
 purification of carbons for, A., 1340.
 use of flame spectra in, A., 1091.
 as accessory in testing of materials, A., 1094.
 in high-frequency spark, A., 947.
 quantitative, A., 835; (P.), B., 788.
 accuracy of log sector method of, A., 315.
 of gases, A., 462.
 of metals, A., 185.
 of slightly volatile substances in the arc, A., 318.
 flame, A., 947.
Spectroscopy, A., 279.
 and valency, A., 432.
 photographic plates for use in, B., 525.
 absorption, error in, A., 320.
 hydrogen discharge tube for, A., 1340.
 X-ray emission, samples for, A., 1340.
Speiss, rusting of, due to oxidation, B., 1146.
Sperms, action of halogenoacetic acids on glycolysis and mobility of, A., 1006.
Sperm oil, pristane in, A., 1397.
Spessartite in Cambrian manganese ores, A., 1220.
Sphaerophorol dimethyl ether, A., 347.
Sphagnum fimbriatum. See Bog-moss.
Sphalerite, separation of chalcopyrite in, A., 841.
 Oklahoma, elements in, A., 322.
Spherites, A., 162.
Spingomyelin, determination of isoelectric point of, A., 194.
 molecular resonance in, A., 1304.

- Spice, production of, (P.), B., 653.
treatment of, (P.), B., 173.
- Spiders, red, control of, B., 374.
on tomatoes, B., 374.
- Spin theory, Dirac's, and non-linear field equations, A., 1298.
- Spinach, preserved, vitamin-B and -C in, A., 1546.
vitamin-C in, A., 417.
- Spinastanol, and its salts, A., 210.
- Spinastenols, and their salts, A., 210.
- Spinatsapogenin, and its derivatives, A., 348.
- Spinatsaponin, A., 348.
- Spindle oil, determination of vapour of, in air, B., 710.
- Spinels, structure of, A., 813.
synthesis of, A., 841.
production of, (P.), B., 147.
stability of pigments from, B., 561.
chromite, reaction-expansion measurements on, B., 454.
magnesium-aluminium, crystal structures of, A., 920.
synthetic, (P.), B., 454.
coloured with cobalt, A., 714.
- Spinors, A., 1050.
- Spirits, production of, from liquid sugar, B., 603.
treatment of, with "oxyesterator," B., 650.
expansion of, B., 77.
maturation of, (P.), B., 249.
fermentation of potato mash for, B., 202.
pitching temperatures of mash for, B., 519.
sulphur compounds in, B., 169.
loss of alcohol from, in test apparatus, B., 1113.
loss of alcohol on storage of, in bottles, B., 330.
stop-cocks for containers for, B., 77.
amino-compounds in sediments in metal containers for, B., 170.
potable, testing of, with quartz ultra-violet lamp, B., 872.
determination in, of acetaldehyde, B., 920.
of alcohol and extract, B., 1017.
- Spiritus formicæ Ph. V., testing and keeping properties of, B., 1117.
- Spirochaetes, detection in, of gold, A., 257.
- Spirogyra, stimulation in, A., 419.
conjugating, respiration of, A., 264.
- Spirogyra borgeana, growth of, in spring water, A., 661.
- Spirostomum ambiguum, aerobic respiration and ammonia production of, A., 898.
- Spleen, changes in blood-gases after irradiation of, A., 247.
effect of alcohol on volume of, A., 1412.
role of, in fat and lipin metabolism, A., 523.
influence of, on mineral metabolism, A., 1154.
on sulphur metabolism, A., 1154.
in experimental fever, A., 1159.
phosphatides in, Niemann-Pick disease of, A., 384.
unsaponifiable substance from, in Werloff's disease, A., 1150.
dog's, influence of sodium caseinate on iron content of, A., 644.
- Spleen extracts, effect of, on red blood-corpuscles, A., 643.
on carbohydrate metabolism, A., 1530.
in diabetes, A., 515.
- Splenectomy, blood-cholesterol and fat and lipin contents of adrenal cortex in, A., 645.
effect of, on blood-sugar and liver-glycogen, A., 243.
carbohydrate exchange in, A., 111.
copper and iron metabolism in, A., 392.
glycogenesis in muscle in, A., 410.
influence of nerve poisons on glycosuria in, A., 397.
effect of liver and spleen extracts and of atropine and ergotamine on sugar excretion in, A., 398.
in dogs with bile-fistula, hæmoglobin and bile-pigment production in, A., 1147.
- Spodumene, recovery of lithium sulphate from, B., 723.
- Sponges, iron in, A., 1146.
fresh-water, environmental selection of, A., 1154.
- Spongillidæ. See Sponges, fresh-water.
- Sprays, electrification of liquids in, A., 1446.
use of petroleum products in, B., 199.
removal of residues of, B., 74.
See also Plant sprays.
- Spreading, inter-phase energies in, A., 1458.
- Spreading substances, apparatus for pressure measurements of, A., 467.
- Springs, steel for, B., 634 ; (P.), B., 155.
- Spruce, active charcoal from, B., 85.
holocellulose of, A., 268.
resin acids of, and their fate in manufacture of sulphite-cellulose, B., 586.
damage of, by red and blue rot, B., 446.
insect-killed, on the Gaspé peninsula, deterioration of, B., 408.
- Squalus acanthias. See Dog-fish.
- Squalus sucklii. See Aburazame.
- Squills, extraction of cardio-active principles of, (P.), B., 783, 1023*.
red, treatment of, for preparation of rat-killer, (P.), B., 528.
red and white, from Cyprus, cardiac activity and toxicity of, A., 117.
- Squirrels, ground-, thyroid of. See under Thyroid.
- Stachyose from peas, A., 1550.
- Stachys root, use of, for culture media, A., 409.
- Stains, Flemming triple, Lugol's solution for, A., 422.
haematological, A., 1517.
negative, for bacteria, A., 788.
- Stainierite, A., 725, 1478.
from Swansea mine, Nevada, A., 842.
- Staining with free dye-acids and -bases, A., 268.
Gram method of, A., 257.
by Marchi's method, A., 772.
- Stand oils, mol. wt. of, B., 1101.
heat treatment and iodine value of, B., 237.
fish, substitution of linseed stand oil by, B., 1054.
linseed, changes in, on heating, B., 159.
- Stannic salts. See under Tin.
- Stannite, crystal structure of, A., 152.
- Staphylococcus, crystal-violet-agar as medium for, A., 1169.
antigenic power and properties of antitoxin of, A., 256.
anatoxin and toxin, antigenic power of, A., 1519.
toxin from, A., 665.
development of, A., 1168.
neutrality of flocculating toxin-antitoxin mixtures of, A., 1282.
toxoid, A., 536.
- Stars, theory of structure of, A., 912.
argon in atmospheres of, A., 555.
continuous absorption of hydrogen in, A., 1046.
nuclear reactions at temperatures of, A., 1297.
spectra of, A., 800.
classification of, A., 676.
Stark effect in, A., 908.
calcium and hydrogen lines in, A., 800.
hydrogen lines in, A., 800.
silicon fluoride in, A., 1051.
B, neon in spectra of, A., 800.
cold, scandium oxide in spectra of, A., 1188.
dwarf, calcium in, A., 1046.
- Starch, formation of, in moulds, A., 1166.
synthesis of, by leucoplytes, A., 785.
production of, from dough, (P.), B., 694.
from Indian grains and tubers, B., 284.
varietal and regional variation in, B., 169.
control of purification of, in mills, (P.), B., 120.
distribution of mineral matter in, B., 474.
physical chemistry of, A., 33, 165.
solubilising and desizing of, B., 779.
effect of heat on X-ray diagram of pastes and solutions of, A., 165.
net density of, B., 1112.
colloidal ions of, A., 301.
diastasis of, B., 649.
esterification of, and its degradation products, A., 70.
hydrolysis of, by malt diastase, A., 250.
by takadiastase, A., 1535.
separation of products of enzymic hydrolysis of, B., 1016.
effect of neutral salts on enzymic hydrolysis of, A., 1162.
nitration of, A., 478.
relation of, to amylose, A., 1226.
action of various amylases on, A., 1535.
action of β -amylase on, A., 1415.
effect of neutral salts on action of amylase on, A., 401.
viscosimetry of amylase digestion of, A., 402.
combination of, with iodine, A., 932, 1320.
reaction of, with proteins, A., 165.
action of hydrogen peroxide on carbonaceous substances from reaction of, with sulphuric acid, A., 329.
action of taka-diastase on, A., 1415.
phosphorus in, A., 1549.
benzyl ethers of, A., 331.
dextrins of. See under Dextrins.
hydroxyethyl ether, action of amylases on, A., 401.
nitrates, X-ray structure of, A., 1061.
preparation and explosive properties of, B., 175, 607.
conversion of, in flour, (P.), B., 871.
preparation of baking agents from, (P.), B., 1116.
manufacture of cold-water-soluble adhesives from, (P.), B., 645.
manufacture of disintegration products of, (P.), B., 649.
manufacture of glue from, (P.), B., 864.
manufacture of nutritive sugar product from, (P.), B., 1065.
antigenic action of, A., 1143.
testing of quality of, B., 1112.
cold-water, production of, B., 424 ; (P.), B., 970.
of hardwoods, A., 797.
maize, manufacture of, (P.), B., 120, 871.

- Starch**, maize, steeping process in manufacture of, (P.), B., 649.
 waxy, molecular structure of, A., 477.
 oak and walnut, preparation and properties of, A., 797.
 potato, manufacture of, purity quotient in, B., 1159.
 control of washing-out process in, B., 519, 694.
 yield in, B., 870.
 sedimentation of, with varied p_H , A., 699.
 acceleration of sedimentation of, B., 823.
 esters produced from, B., 202.
 degradation of hydroxyethyl ether of, A., 1415.
 use of, for beater sizing of paper, B., 1039.
 rice, chemical properties of, B., 284.
 colloid chemistry of, and rice boiling, B., 697.
 effect of added fat and protein on hydrolysis of, A., 532.
 soluble, manufacture of, (P.), B., 329.
 determination of, B., 40.
 textile, evaluation of, B., 603.
 determination of alkali-labile value of, B., 1064.
 isolation and determination of, in plant tissues, A., 1550.
 detection of, in beer, B., 1113.
 determination of, B., 1015, 1064.
 by new iodine method, B., 40.
 by takadiastase method, B., 40.
 in flour by-products, B., 329.
 in fruit, A., 240.
 in paper, colorimetrically, B., 447.
 in wheat products, polarimetrically, B., 250.
Starch paste, formation of, A., 580.
 X-ray study of retrogression of, A., 33.
Starch products, manufacture of, (P.), B., 694.
 cold-swelling, manufacture of, (P.), B., 1065.
 determination of alkali-labile value of, B., 1064.
Starch syrup, determination of, in sugar syrups, marmalade, etc., B., 202.
Starfish, action of hyperthermic agents on respiration of cells of, A., 245.
Starin, iodo-, photolysis of, A., 1350.
Stark effect, wave mechanical theory of, A., 676.
Steam, production of, by Loeffler system, B., 209.
 evaluation of coal for, B., 388.
 use of solution cycles for generation of, B., 529.
 treatment of water for generators for, B., 257.
 trap device for purification of water for generators for, (P.), B., 258.
 storing and uses of heat from plant for, (P.), B., 83.
 accumulators for, in paper mills, B., 942.
 cleaning of, from boilers, (P.), B., 434.
 corrosion of galvanised iron in, B., 410.
 action of, on glass, B., 901.
 See also Water vapour.
Stearic acid, alkali salts, analgesic compositions of alkali salicylates and, (P.), B., 174.
 arginine and lysine esters, A., 966.
 ethylmercuric ester, manufacture of, (P.), B., 333.
 glucose ester, colloid chemistry of, A., 821.
 phytosteryl ester, A., 487.
 azo-dye from, A., 969.
 λ -isoStearic acid. See α -Methyl-*n*-heptadecic acid.
Stearolactone, λ -hydroxy-, A., 65.
Stearolic acid, iodine values of, A., 473.
Stearo- β -naphthylamide, 3-amino-, and its derivatives, A., 969.
Steel. See under Iron.
Stencil paper, manufacture of, (P.), B., 944.
Stencil sheets, (P.), B., 267.
Stephanite, crystal photo-effect with, A., 282.
Stephanurus dentatus, effect of copper sulphate on larvae of, B., 1158.
Stercobilin, and its optical activity, A., 1384.
 crystalline, A., 774.
Stercoporphyrins, determination of, A., 1525.
Stereochemistry, A., 89, 487, 765, 974.
 of addition and substitution reactions, A., 211, 219, 341, 349.
 of solids, A., 1449.
Stereoisomerism due to restricted rotation of single linking, A., 1237.
Stereolepisane, A., 1176.
Steric hindrance, overcoming cases of, A., 858.
 analysis of intermolecular forces by, A., 1112.
Steric series, A., 849.
Sterilisation, rôle of air in, B., 44.
 liquids for, (P.), B., 704.
 chlorine organic compounds for, (P.), B., 287.
 with chlorine and chloramine, B., 927.
 oligodynamical substances for, (P.), B., 928.
 by ultra-violet light, A., 788.
 apparatus for, (P.), B., 827.
 of biological powders, B., 323.
 of dairy equipment, B., 1066.
 of dairy plant with lye and chlorine solutions, B., 873.
 of filter pads, (P.), B., 290.
 of liquids, (P.), B., 880, 958, 1120.
 by heat, (P.), B., 978.
 of medicinal preparations, B., 605.
 of oils, by dry heat, B., 605.
 of pharmaceutical solutions, B., 1067.
 of solutions for injection, B., 252.
Sterilisation apparatus, (P.), B., 108, 882.
 comparison of filters in, B., 209.
 electrical, (P.), B., 316.
Sterilisers, manufacture of, (P.), B., 206.
 chlorine, use of sodium thiosulphate dilution blanks in determination of germicidal efficiency of, B., 927.
Sterility, dietary protein in relation to, A., 1403.
 of dairy cows, relation of blood-calcium and -phosphorus to, A., 1403.
Sterols, formation of, by moulds, A., 1540.
 synthesis of carbon skeleton of, A., 974.
 polyterpenoid nature of, A., 1493.
 stereochemistry of, A., 857.
 steric inversion of, A., 1125.
 electrophoresis of, A., 823, 1523.
 and their derivatives, surface films of, A., 974.
 migration of quaternary methyl group in dehydrogenation of, A., 487.
 hydrocarbons from dehydrogenation of, A., 481, 617.
 crystal structure of hydrocarbons from, A., 286.
 dibromides, action of iodides on, A., 1120.
 derivatives, reaction of, with digitonin, A., 616.
Sterols, synthesis of compounds related to, A., 74, 741, 752, 968, 1492, 1495, 1496, 1498.
 accumulation of, in bottom yeast, A., 1165.
 and cancer, A., 1400.
 vitamin-A from, A., 129.
 removal of, from vitamin-D-containing material, A., 903.
 action of, with acetylcholine in tissues, A., 1156.
 in Itoyo fish oil, B., 912.
 plant, fate of, in the animal organism, A., 113, 1015.
 from slash-pine, A., 864.
 determination of, A., 487.
 in cereals and legumes, A., 1434.
Sterol group, A., 1235, 1493.
Stibine. See Antimony trihydride.
Stibino-groups, effect of, on reactivity of nuclear chlorine, A., 876.
Stibnite, occurrence of, in quartz, A., 323.
 diffraction of slow electrons by, A., 1308, 1309.
 inner potential of, A., 1309.
Stictanil, A., 214.
Stietic acid, and its derivatives, A., 213, 1501.
Stictic acid, A., 1501.
epiStigmastanol, and its acetate, A., 1371.
Stigmastanone, and its hydrate, and its oxime, A., 1371.
Stigmasterol, structure of, A., 210.
 degradation of, A., 1033.
 preparation of corpus luteum hormone from, A., 260.
Stilbazole, and its derivatives with acetylenedicarboxylic ester, A., 500, 501.
Stilbene, *cis- $\alpha\alpha'$ -diamino-*, derivatives of, A., 1118.
 2:4-diamino-, and its salts and derivatives, A., 1505.
 trinitro-, photochlorination of, A., 1358.
 2:4:6-trinitro-, bromination of, A., 480.
Stilbenes, aminated, double, A., 1505.
 α -aminated, transformation of, into indole or indoline derivatives, A., 1505.
Stilbene dyes, manufacture of, (P.), B., 985.
meso-Stilbene-diaminoisobutylene-diamino-platinous salts, resolution of, A., 1057.
Stills, (P.), B., 579.
 for concentration under reduced pressure, A., 467.
 coking, gas from, B., 1028.
 laboratory, reflux regulator for, A., 1342.
 steam-column, (P.), B., 1026.
 tube, (P.), B., 83.
Stilpnochlorane, constitution of, A., 725.
 from Gobitschau, Moravia, A., 469.
Stilpnomelane, constitution of, A., 725.
 in schists from Western Otago, N.Z., A., 323.
Stirrers, circulatory, A., 840.
 laboratory, A., 840.
Stock, plant poisoning in, A., 657.
Stoichiometry, A., 436.
Stomach, perfusion of, A., 1152.
 acid secretion by, A., 1005.
 secretory function of, in hyperamino-acidæmia, A., 1146.
 function of, in relation to sugar tolerance, A., 1016.
 preparations of, for treatment of pernicious anæmia, A., 514.
 anti-anæmic preparations from, A., 107, 885.
 of herbivorous animals, chlorophyll decomposition products in, A., 110.
 detection in, of free hydrochloric acid, A., 1147.

- Stomatitis vesicular**, ultrafiltration of virus of, A., 1030.
- Stone**, crushers for, (P.), B., 786.
- colouring of, (P.), B., 711.
- adhesion between acid oils and, B., 61.
- adhesion of bituminous binders to, B., 62.
- preserving agents for, (P.), B., 457.
- artificial, (P.), B., 409.
- manufacture of, from chamotte or grog, (P.), B., 632.
- biological. See *Calculi*.
- broken, drying apparatus for, (P.), B., 434.
- meteoric. See *Meteoric stones*.
- precious. See *Gems*.
- refractory. See *Refractory stone*.
- synthetic, for mills, B., 577.
- Stone implements** found near Victoria Falls, patina of, B., 456.
- Stoneware**, manufacture of, B., 630.
- manufacture of articles of, (P.), B., 1044.
- chemical, uses of, B., 227.
- white, B., 1094.
- Stonework**, of the Irish National Museum and of Government Buildings, weathering of, B., 24.
- Stoppers**, device for preventing loss of, A., 600.
- Stoves**, work-batch location indicator for, (P.), B., 755.
- cast-iron, enamels for, B., 630.
- Strainers**, removable protected-bottom, B., 82.
- Stratosphere**, chemical engineering in, B., 577.
- helium in, A., 1477.
- Straw**, pulping of, B., 221.
- two-stage pulping of, B., 221.
- decomposition of, in production of artificial manures, B., 514.
- utilisation of inorganic nitrogen in decomposition of, B., 282.
- hydrolysis of, A., 344.
- transformation of, into an acetylated carbohydrate, A., 1227.
- feeding-stuff for cattle from, B., 971.
- artificial, manufacture of, (P.), B., 987, 1139.
- barley, extraction of lignins from, A., 214.
- flax, purification and pulping of, B., 142.
- rice, decomposition of, A., 787.
- use of, in paper manufacture, B., 845.
- anaerobic decomposition of, A., 537, 664.
- wheat, influence of composting on changes in, B., 165.
- resin of, A., 1041.
- winter, nutritive value of, A., 652.
- Strawberries**, physiology of growth and ripening of, A., 1177.
- control of tarsonomid fly on, B., 1013.
- Strawberry plants**, effect of reaction of nutrient on growth of, B., 422.
- influence of fertilisers on, B., 422.
- fertilisers and reaction of soils for, B., 690.
- Strength**, theory of, A., 19, 288.
- Streptococci**, culture medium for, A., 663.
- isolation of, from milk, A., 663.
- respiratory mechanism of, A., 1168.
- curative substances for infections by, A., 1159.
- treatment of infection with, with cuprammonium sulphate, A., 1009.
- haemolytic, fibrinolytic activity of, A., 664.
- on blood in lymphangitis, A., 384.
- toxins from, A., 665.
- Streptococcus cremoris***, effect of ultra-short waves on, B., 873.
- Streptococcus haemolyticus***, formation of precipitin for group A specific carbohydrate of, A., 1168.
- Streptofibrinolysin**, stability of, A., 1396.
- Streptothrix***, toxicities of acetic and sulphuric acid towards paratubercle and tubercle bacilli and, A., 537.
- Stress**, analysis of, by X-ray diffraction, A., 1449.
- mechanical, electrical measurement of, B., 957.
- Striga lutea***, control of, B., 248.
- Stromeyerite**, relations of, to argentite and chalcocite, A., 602.
- Strontium**, nuclear moment of, A., 800.
- geological frequency of, A., 1102.
- spectrum of, A., 2.
- K α -emission spectrum of, A., 1439.
- electric furnace ionisation effect with, A., 3.
- m.p. of, A., 925, 1063.
- in human organs and excreta, A., 883.
- Strontium compounds** of perovskite structure, A., 433.
- Strontium arsenate**, reduction of, by carbon, A., 714.
- chloride, absorption spectrum of, A., 1299.
- band spectrum of, A., 562.
- electrical conductivity of glycerol solutions of, A., 304.
- effect of, on tissue oxidation, A., 896.
- hydride, spectra of, A., 1443.
- hydroxide, thermal dissociation of, A., 168.
- fusion of, with strontium nitrate, A., 703.
- hydrate, thermal dissociation equilibria of, A., 168.
- nitrate, fusion of, with strontium hydroxide, A., 703.
- oxide, heat capacity of, at low temperatures, A., 574.
- peroxide, rate of decomposition of, A., 41.
- sulphate, precipitation of, from super-saturated solutions, A., 577.
- Strontium detection and determination** :—
- detection of, in presence of barium and calcium, A., 719, 949.
- determination of, as oxalate, A., 1338.
- spectrographically, A., 719.
- Strophanthidin**, crystal structure of, A., 921.
- Strophanthin**, A., 624.
- from *Strophanthus emini*, B., 606.
- adsorption of, in presence or absence of proteins, A., 527.
- action of, on heart, A., 1018.
- on oxidation in tissues, A., 527.
- Strophanthus***, differentiation of seeds of, B., 1164.
- assay of, A., 527.
- Strophanthus emini***, seeds of, B., 606.
- strophanthin of, B., 606.
- Strophanthus hispidus***, genins of heart poisons from, A., 624.
- Strophanthus kombe***, chemistry and pharmacology of seed extracts of, A., 551.
- Struvite**, arsenical, crystal structure of, A., 434.
- Strychnidine**, perhydrogenation of, to isomeric bases, and their salts, A., 367.
- neoStrychnidine** derivatives, A., 505.
- Strychnine**, A., 1137, 1389.
- constitution of, A., 367.
- separation of, from cinchona alkaloids, B., 1067.
- masking of bitterness of, B., 123.
- oxidation of, A., 99.
- methiodide, curariform activity of, A., 528.
- Strychnine**, cardiac effect of, with cardiac tonics, A., 893.
- hyperglycaemia from, A., 397.
- action of, alone, or combined with uterine tonics, on rabbit uterus, A., 1410.
- distribution and determination of, in tissues, A., 1018.
- determination of, in mixed alkaloids, B., 924.
- Strychniolones**, hydrogenation of, and their derivatives, A., 367.
- Strychnos alkaloids**, A., 367, 505, 996, 1389.
- Styphnic acid**, adsorption of, by sugar charcoal, A., 28.
- Styrene**, preparation of, A., 74.
- polymerisation of, A., 739.
- Styrenes**, nitro-, catalytic reduction of, A., 1497.
- ω -nitro-, catalytic hydrogenation of, A., 1492.
- preparation of β -phenylethylamines from, A., 1232.
- substituted, catalytic reduction of, A., 744.
- Styryl dyes**, use of, in quantitative micro-analysis, A., 1473.
- 3-Styryl-1- α '-aminostyrylbenzene**, 4:6-diamino-, and its hydrochloride, and 4:6-dinitro-, and 4:6-dinitro-3- m -nitro-, and their 1- α '-acetyl derivatives, A., 1505.
- γ -Styryl- β -benzylbutyric acid**, A., 746.
- Styrylcarbamic acid**, o -nitro-, methyl ester, reaction of, with methyl alcohol, A., 206.
- 1-Styrylcarbylaminotetrazole**, 4-amino-, and 4-amino-1-dibromo-, A., 1509.
- 2-Styrylchromone**, 7-hydroxy-, and 7:4'-dihydroxy-, and its derivatives, A., 90.
- 3-Styryl-2:3-dihydro-1:4- β -naphthapyrone**, A., 1129.
- Styryl β -hydroxy- β - o -nitrophenylethyl ketone**, and its derivatives, A., 345.
- 1-Styryl-2-methylbenzene**, 4:6-dinitro-1- α '-amino-, A., 1505.
- 1-Styryl-3-methylbenzene**, 4:6-dinitro-1- α '-amino-, 1- α '-acetyl derivative, A., 1505.
- Styryl methyl ketone**, condensation of, with nitrobenzaldehydes, A., 345.
- 2-Styryl-1:4- α -naphthapyrone**, A., 1129.
- 3-Styryl-1:4-naphthapyrone**, A., 1129.
- Styryl nitrostyryl ketones**, and their derivatives, A., 345.
- 4-Styryl-Bz-1-phenylbenzanthrone**, A., 1124.
- Styrylselenazoles**, trypanocidal action of, A., 1283.
- 2-Styryl-4:5:6:7-tetramethylbenzimidazole**, A., 1114.
- Styryl triazine**, aminohydroxy-, A., 1254, 1255.
- Suberanilido- pp' -diarsinic acid**, and its sodium salt, A., 768.
- Suberic acid**, heptamethylene ester, A., 845.
- p -nitrobenzyl ester, A., 81.
- Sublimation**, (P.), B., 1075.
- speed of, A., 925.
- Submaxillary glands** in cats, humoral control of secretion by, A., 116.
- Subsoils**. See under *Soils*.
- Substance**, C₈H₁₈O₂, from reduction of ethyl Δ^8 -hexenoate, A., 67.
- C₁₀H₂N₄, and its derivatives, from 4-chloro-2-methylquinoline, A., 989.
- C₁₁H₁₃ON₃, and its derivatives, from 4-chloro-6-methoxy-2-methylquinoline, A., 989.
- C₁₆H₁₂O₆, from phloroglucinol, acetic acid, and zinc chloride, A., 90.
- C₁₇H₃₀O₂, from oxidation of civetone, A., 65.

- Substance**, $C_{19}H_{14}O_6$, from derris root, A., 92.
- $C_{10}H_{20}O_6$, from *p*-methoxybenzaldehyde and ω -chloro-2:4:6-trimethoxyacetophenone, A., 220.
- $C_{21}H_{18}O_5$, from 3-methylindan-1:2-dioneoxime and formaldehyde, A., 980.
- $C_{24}H_{33}O_5N$, from isobilanic acid dioxime, oxidation of, A., 1236.
- $C_{27}H_{40}O_2$, from *Teramus labialis*, A., 132.
- $C_{27}H_{46}O_2$, from *Teramus labialis*, A., 132.
- $C_{33}H_{30}O$, from dibenzylidencyclohexanone, A., 855.
- $C_{52}H_{45}O_4N_4Br$, from phenacetylpyridinium bromide and potassium carbonate, A., 987.
- $C_{76}H_{41}O_4N_4Br$, from *p*-phenylphenacetylpyridinium bromide and potassium carbonate, A., 987.
- Substitution**, constitutional and solvent effects on mechanism, kinetics, velocity, and orientation of, A., 452.
- study of, by means of photo-electric cells, A., 563.
- in aromatic compounds, A., 74.
- at saturated carbon atoms, A., 452.
- amphoteric, aromatic, A., 78, 207.
- nuclear, effect of, on side-chain reactions, A., 1209.
- Subways**, luting of, in Berlin, B., 1054.
- Succinaldehydic acid**, *p*-nitrophenylhydrazone, A., 67.
- d*-Succinaldehyde, dihydroxy-, diphenylhydrazone, A., 67.
- Succinic acid**, adsorption and oxidation of, by carbon, A., 1467.
- dehydrogenation of, by charcoal, A., 940.
- barium salt, crystal structure of, A., 152.
- cetyl and nonyl esters, A., 730.
- cholesteryl ester, crystal structure of, A., 152.
- di- β -acetoxyethyl ester, A., 327.
- β -ethylbutyl ester, (P.), B., 262, 715.
- ethylene and polymethylene esters, A., 845.
- ethylene glycol hydrogen ester, production of, (P.), B., 762.
- derivatives, rupture of carbon chain in, A., 474.
- determination of, microchemically, A., 1406.
- Succinic acid**, bromo-, salts, velocity of reaction of, with thiosulphates, A., 1207.
- Succinic acids**, esters, alkylation of, A., 64.
- substituted, derivatives of, A., 212.
- Succinic anhydride**, sodium enolate, and its reaction with benzaldehyde, A., 344.
- Succinimide**, electrolytic reduction of, A., 1378.
- Succinodehydrase**, model of reaction of, A., 940.
- Succino- α -nitrobenzylimide**, and its derivatives, A., 1387.
- Succinotriphenylmethylhydrazide**, A., 78.
- 3-Succinylandrosterone**, A., 1125.
- Succinylbisazotriphenylmethane**, A., 78.
- 3-Succinylidihydroandrosterone**, A., 1125.
- Succinylsuccinic acid**, esters, rearrangement of, A., 992.
- Sucrose**, dipole moment of, A., 148.
- m.p. of, B., 329.
- apparent molecular volume of, A., 162.
- density tables for solutions of, B., 870.
- influence of sodium hydroxide on p_H of solutions of, B., 1064.
- action of air on solutions of, A., 735.
- solubility of lime and, in their solutions, A., 928.
- Sucrose**, velocity of crystallisation of, A., 159; B., 75.
- caramelisation of, A., 1485.
- effects of impurities on decomposition of, during barley candy test, B., 648.
- activities and hydrolysis of, by concentrated acids, A., 308.
- velocity of hydrolysis of, A., 587.
- by hydrochloric acid, A., 308.
- inversion of, in heavy water, A., 43.
- kinetics of, A., 173.
- inversion of solutions of, by electric currents, A., 1468.
- effect of strong electrolytes on rate of inversion of, A., 1328.
- influence of, on p_H of alkaline solutions, A., 170.
- additive compound of, with potassium hydroxide, A., 964.
- formation of fat from glucose and, A., 1273.
- constitution of "humic acid" from, A., 623.
- enzymic synthesis of, A., 659.
- enzymic decomposition of, A., 534.
- in presence of formaldehyde, A., 783.
- nutritive values of glucose and, A., 654.
- determination of, by measurement of sp. gr. and specific rotation, A., 330.
- baryta clarification in, B., 519.
- in bagasse, B., 514.
- in beetroots, B., 76.
- in fruit, A., 240.
- in jam and chocolate, B., 204.
- iso*Sucrose, constitution of, and its octamethyl ether, A., 1226.
- configuration of, A., 69.
- Sudburite**, A., 1344.
- Suet**, microscopy of, B., 521.
- beef, influence of feeding on composition and properties of, B., 1066.
- shredded, material for coating of, B., 562.
- Sugar**, manufacture of, (P.), B., 119.
- physico-chemical control in, B., 1015.
- pan-control instruments for, B., 1159.
- in sulphite-pulp cooking, B., 778.
- from wood, B., 119; (P.), B., 119.
- and magnesium oxide, from molasses and dolomite, B., 823.
- extraction of, from spent active carbon, B., 518.
- control of milling extraction of, by juice-density curves, B., 1062.
- boiling of, B., 692.
- vacuum pans for, B., 201.
- forced circulation in, B., 201.
- vacuum-pan boiling of, automatic control in, B., 201.
- conductivity control of, B., 201.
- ammonia and carbon dioxide content of steam and condensate from evaporators for, B., 39.
- drying of, (P.), B., 83.
- centrifugal drying of, B., 823.
- dryers for, B., 1015.
- treatment of melts of, (P.), B., 649.
- prevention of caking of, with calcium phosphate, B., 249.
- calculation of solid distribution in, with a four-masseuite formula, B., 1062.
- microscopy of, B., 169.
- crystallisation of, and formation of molasses, B., 870, 920.
- apparatus for, (P.), B., 1027.
- growth rate of crystals of, B., 743.
- production of gluconic acid from, B., 1065.
- manufacture of plastics from, B., 562.
- beet, manufacture of, from molasses, (P.), B., 1064.
- Sugar**, beet, manufacture of, in Germany, B., 119.
- "undetermined losses" in, B., 201.
- disposal of wastes from, B., 249.
- occurrence of heavy water in, B., 75.
- decolourisation of, with hyposulphites and sulphonylates, B., 869.
- horizontal and vertical crystallisation of strikes of, B., 1064.
- biological value of dry press cake from, A., 1629.
- raw, control of affining qualities of, B., 329.
- organic coefficient of, B., 423.
- determination in, of ash, conductometrically, B., 1111.
- cane, manufacture of, control with polarisation balance in, B., 693.
- colouring substances of, B., 603, 870, 920.
- turbidity in solutions of, B., 648.
- raw, manufacture of, (P.), B., 694.
- clarification of, for polarimetric examination, B., 202.
- rôle of micro-organisms in deterioration of, B., 518.
- determination in, of reducing sugars, B., 518.
- of polarisation and reducing sugars, B., 693.
- cane and maple, manganese in, B., 648.
- invert, formation of, during evaporation of juices, B., 1112.
- oxidation of, by cupric oxide in presence of sodium phosphate, A., 329.
- packing of, (P.), B., 970.
- for transport, (P.), B., 249.
- detection of, in presence of sucrose, B., 328.
- in small amounts in presence of sucrose, A., 848.
- determination of, B., 76.
- volumetrically, elimination of calcium in, A., 964.
- neutral copper solution for, B., 568.
- low-grade, drying of, at Waialua, B., 693.
- maize, manufacture of blocks of, (P.), B., 871.
- maple, analysis of, B., 1015.
- raw, control of refining of, by electrical conductivity, B., 693.
- effect of boiling on quality of, B., 75.
- lead volume error in polarisation of, B., 75.
- determination in, of ash, electrochemically, B., 474.
- of invert sugar, B., 375.
- semi-refined, production of, on the plantation, B., 693.
- white, manufacture of, B., 200.
- by open-pan method, B., 39.
- impurities in, B., 603, 648.
- coolers for, B., 1015.
- wood, production of, and spirit and fodder yeast therefrom, B., 648.
- bakers' yeast from, B., 518.
- determination of, in bagasse, B., 328.
- in blood. See under Blood.
- in urine. See under Urine.
- Sugars**, double linking rule in chemistry of, A., 609.
- specificity of hydroxyl groups in, A., 476, 1354.
- Walden inversion in, A., 199, 964.
- junction potentials between solutions of potassium chloride and, A., 1462.
- crystal structure of, A., 1195, 1484.
- fermentation of, A., 253.
- alcoholic fermentation of, (P.), B., 203.
- by brewers' yeast, A., 661.

Sugars, effect of acetic acid on yeast fermentation of, A., 661.
 effect of amino-acids on, in presence of yeast, A., 1280.
 velocity of fermentation of, by zymase, A., 1164.
 fission of, A., 329, 852.
 oxidation of, by air, effect of ceric hydroxide sol and cerous hydroxide gels on, A., 1328.
 precipitation of, with methyl-alcoholic barium hydroxide, A., 329.
 reaction of, with amino-acids, A., 332.
 with *o*-phenylenediamine, synthesis of heterocyclic compounds from; A., 224.
 with sulphuric acid, action of hydrogen peroxide on carbonaceous substances from, A., 329.
 acetone compounds of, and their derivatives, A., 735.
 ternary compounds of, with ammonia and β -diketones, A., 1108.
 dispersion and rotatory dispersion of derivatives of, A., 431.
 rearrangement of acetates of, by aluminium chloride, A., 1355.
 anhydrides of, characterisation of, by acid hydrolysis, A., 1354.
 synthetic, A., 1109.
 tritylation of mercaptals of, A., 199, 734.
 bacteriological purity of, B., 694.
 selective absorption of, A., 522.
 rate of absorption of various, and subsequent glycogenesis, A., 1273.
 absorption of, in intestines, A., 522.
 effect of pH on, A., 391.
 effect of liver extracts on excretion of, A., 398.
 effect of liver and spleen extracts and of atropine and ergotamine on excretion of, in splenectomy, A., 398.
 effect of spleen extracts and bile acids on excretion of, in cases of biliary fistula, A., 398.
 oxidation of, by muscle in avitaminosis-B., A., 130.
 phosphorylation of, by intestinal extracts, A., 521.
 effect of diet on tolerance to, A., 1404.
 influence of vagus on tolerance to, in dogs, A., 116.
 acetylated, with free α -position, A., 1108.
 with branched carbon chains, A., 196.
 fermentable, determination of, in muscle, A., 1397.
 Indian, assay of, B., 743.
 isomeric, transformations of, A., 329.
 ketone. See Ketoses.
 methylated, demethylation of, A., 1107.
 and pyranose ring, A., 1484.
 mixed, hygroscopicity of, B., 603.
 pyranose, configuration of, A., 1484.
 rare, bacterial fermentation of, A., 786.
 reducing, oxidation of, by oxygen, A., 1354.
 determination of, A., 68, 734; B., 519.
 by Luff's copper-test solution, B., 329.
 in bacteriological media, A., 257.
 in raw cane sugar, B., 518.
 diluting cylinder for analysis of, B., 249.
 determination of, by Bertrand's method, in presence of phosphates, A., 329.
 by von Fellenberg's titrimetric method, A., 1484.
 iodometrically, in presence of thiocyanate, A., 270.
 in flour and bread, B., 1113.
 determination in, of ash, B., 474.

α - and β -Sugars, nomenclature of, A., 476.
Sugar acids, isopropylidene derivatives, conversion of salts of, into methyl esters, A., 731.
 monobasic, lactonisation of, A., 196.
 reaction of, with barium hydroxide, A., 327.
Sugar beet. See Beetroots.
Sugar cane, research on, A., 266.
 culture of, B., 1011.
 growth of, B., 1011.
 in boron deficiency, A., 266.
 rate of percolation of water in soils and, B., 374.
 ripening and tests for maturity of, B., 38.
 effect of watering on ripening of, A., 549.
 nutritional physiology of, A., 131.
 malnutrition of, in culture solutions, A., 266.
 fertilisers for, B., 868, 1110.
 in St. Kitts, B., 868.
 ammonium sulphate as, B., 820.
 Chilean nitrate and ammonium sulphate as, B., 199.
 mixed fertilisers for, in Puerto Rico, B., 199.
 mills for, (P.), B., 1112.
 rolling mills for, (P.), B., 834.
 soils for, B., 868.
 flooding of, B., 868.
 biochemistry of, B., 865.
 use of lime-salt on, B., 820.
 phosphates in, B., 917.
 effect of chloropicrin soil treatment on, B., 118.
 British Guiana soils for, B., 868.
 Mauritius soils for, B., 1156.
 storage of, B., 202.
 pathology of, B., 118.
 gum-producing organisms in, B., 249.
 control of *Anomala orientalis* on, in Hawaii, B., 690.
Pythium root rot of, B., 690.
 recovery of, from yellowing, B., 517.
 POJ2878, manufacturing qualities of, B., 75.
 determination of maturity of, in the field, B., 690.
 indirect determination of fibre in, B., 1062.
Sugar dust, separation of, from air, B., 329.
Sugar factories, deposits in boilers in, B., 201.
 feed-water in, B., 743.
 condensing equipment for, B., 473.
 control of evaporators in, B., 328.
 heat losses in evaporators in, B., 328.
 corrosion of evaporators in, B., 692.
 regenerative evaporation by thermocompressors in, B., 1063.
 use of kieselguhr for filtration in, B., 75.
 beet, pre-defecation in, B., 1063.
 incrustations in evaporating plant in, B., 648.
 colloids in waste water from, B., 976.
 determination of amides and amino-acids in products from, B., 201.
 cane, removal of oil from boiler-feed water in, B., 328.
 regeneration of carbonatation scums in, B., 201.
Sugar grass. See *Sorghum saccharatum*.
Sugar juice, treatment of, by Dédékovášátko process at Tirlmont, B., 200.
 purification of, B., 473; (P.), B., 329, 970.
 helical agitator for, (P.), B., 474.

Sugar juice, electrolytic purification of, (P.), B., 329.
 zeolitic purification of, B., 518.
 control of boiling of, by electrical conductivity, B., 283.
 mechanical circulation in vacuum pans for boiling of, B., 473.
 "Ila carbonatation" of, B., 200.
 influence of carbonatation scums on colour of, B., 328.
 presses for carbonatation scum from, B., 1111.
 clarification of, by "micro-flotation," B., 1063.
 removal of non-sugars in, B., 328.
 role of colloids in, B., 200.
 decolorisation of, (P.), B., 871.
 with active carbon, B., 1159.
 corrosion of evaporators by, B., 518.
 addition of active carbon in evaporators for, B., 1063.
 steam consumption in multistage evaporation of, B., 1159.
 determination of density of, during evaporation, B., 1112.
 defecation of, (P.), B., 920.
 pre-defecation of, with milk-of-lime, B., 75.
 filter-pressing of saturation precipitates in, B., 39.
 activity of *Lactobacillus* and purity of, B., 39.
 origin of oxalates in, B., 1112.
 pectic matter in, B., 1063.
 of POJ2878, handling of, in factories, B., 1014.
 beet, treatment of, with lime and hyposulphites, B., 920.
 purification of, B., 743.
 with hyposulphites, B., 39.
 by lime, theory of, B., 648.
 effect of addition of acid in, B., 743.
 effect of method of purification on non-sugar in, B., 920.
 clarification of, by W.N.J.S. method, B., 1063.
 amount of lime in, B., 473.
 with silicic acid, B., 1111.
 removal of colloids from, by clarification, B., 1014.
 coagulation of, B., 75, 1111.
 acid range in, B., 200.
 pre-defecation of, B., 692.
 froth-preventing agents for, B., 1111.
 darkening of, during evaporation and boiling, B., 920.
 formation of invert sugar in, during evaporation, B., 1112.
 large-scale preservation of, B., 200.
 effect of processing on alkalinity of, B., 328.
 filtration test for quality of, B., 328.
 raw, behaviour of colloids in purification of, B., 518.
 colloidal clarification of, B., 692.
 spectroscopic analysis of, B., 375.
 determination in, of ash, conductometrically, B., 1063.
 cane, clarification of, B., 473.
 with "salfosol" in Java, B., 1014.
 purity of, in relation to manganese in soils, B., 823.
 salts in, B., 1014.
 Trinidad, solubility relationships of, B., 423.
 carbonatated, hardening of filter-cloths for, B., 1159.
 control of alkalinity of, B., 692.
 diffusion, divided measuring tank for, B., 75.

- Sugar juice, thick, alteration in colour between molasses and, B., 201.
determination in, of ash substances, B., 1111.
of potassium, B., 328.
- Sugar plantations, production of yeast on, B., 1015.
- Sugar products, manufacture of, from starch, (P.), B., 1065.
mercure-vapour lamp for measurement of colour of, B., 283.
turbidity in, B., 648.
determination in, of water, by dielectric method, B., 1015.
- Sugar solutions, preparation of, B., 77.
clarification of, for analysis, with bone charcoal and carboraffin, B., 119.
volume of precipitate in, B., 39.
decolorisation of, with active carbon and hydrosulphite, B., 1014.
errors in polarisation of, B., 693.
gelation of, with calcium glycolate, B., 40.
production of yeast from, B., 40.
alkaline, platinum electrode potentials in, A., 170.
concentrated, viscosity of, B., 870.
supersaturated, viscosity and conductivity of, B., 693.
- Sugar syrups, production of, from cashew apple, B., 39.
effect of removal of lime salts on crystallisation of, B., 518.
effect of, on metals, B., 459.
cane, manufacture of, B., 1063.
iron in, B., 283.
edible, manufacture of, (P.), B., 1065.
"invert," manufacture of, from surplus cane, B., 1062.
refractometric determination of dissolved solids in, B., 1064.
determination in, of ash substances, B., 1111.
of sucrose, invert sugar, and starch syrup, B., 202.
- Suipestifer*, heat-stable agglutinogens in, A., 1395.
- Sulcatoxanthin, A., 1005.
- Sulfosin, treatment of dementia praecox with, A., 108.
- Sulphamidochrysoidine hydrochloride, effect of light on antiseptic action of, A., 900.
- Sulphanilic acid. See Aniline-*p*-sulphonic acid.
- Sulpharsphenamine. See Sulphosalvarsan.
- Sulphates. See under Sulphur.
- Sulphate-pulp, origin of wood and quality of, B., 446.
- 3- β -Sulphatoethylamino-*p*-tolyl methyl ether, manufacture of, (P.), B., 797.
- β -Sulphatoethyl-*m*-toluidine, manufacture of, (P.), B., 797.
- Sulphides, dissociation vapour pressure of, and their order of mineral deposition, A., 727.
velocity of oxidation of, by peracetic acid, A., 1464.
role of, in hydantoin synthesis of amino-acids, A., 628.
aromatic, A., 615.
inorganic, solubility of, in infusions of organs, A., 399.
organic, saturation pressures of, A., 966.
arsenic derivatives of, A., 227.
detection of, with ultra-violet light, A., 53.
determination of, in alkaline solutions, A., 53.
in presence of chlorides, volumetrically, A., 835.
- Sulphides, determination of, in presence of chlorides and thiocyanates, A., 1215.
in effluents, B., 176.
- disulphides*, organic, manufacture of, (P.), B., 1037.
hydrolytic fission of, A., 1106.
reaction of, with triphenylphosphine, A., 339.
determination of, A., 1111.
colorimetrically, A., 877.
- poly*Sulphides, origin of, A., 945.
- Sulphide ions, determination of chloride ions, thiocyanate ions, and, A., 1336.
- Sulphites. See under Sulphur.
- Sulphite liquors, preparation of vanillin from sawdust and, A., 750.
waste, lactone of, A., 83, 623, 754, 860, 1126.
production of ultramarine from, B., 32.
- Sulphite-pulp, manufacture of, (P.), B., 944.
problems in, B., 719.
rate of, B., 1088.
wet electro-filtration in, B., 845.
heat requirements for, B., 399.
recovery of heat and sulphur dioxide in, B., 667.
use of limestones in, B., 221.
corrosion of metals in, B., 667.
formation of trioxide in sulphur burner gases for, B., 590.
pretreatment of wood for, B., 221.
production of concentrated cooking acid for, B., 671.
treatment of, (P.), B., 448.
hypochlorite bleaching of, B., 764.
heat exchangers and boiler plant in mills for, B., 184.
corrosion in mills for, B., 411.
cooking of, (P.), B., 143.
chemistry of, B., 446.
control of, B., 1136.
formation and decomposition of sugar in, B., 778.
high lime content of acid in, B., 490.
mill test for combined sulphur dioxide in, B., 490.
circulation of cooking liquor for, B., 942.
circulation of liquor in digesters for, B., 719.
digestion of, with recovered liquor, B., 299.
heat-recovery and washing system for, (P.), B., 799.
improving quality of, B., 446.
origin of wood and quality of, B., 446.
yield of, from wood, B., 399.
moulding composition from waste liquor from, (P.), B., 944.
conversion of sodium sulphide into carbonate in recovery of liquors from, B., 1042.
determination of p_H of waste liquors from, with glass electrode, B., 798.
- α -Sulphoacrylic acid, and its salts and dichloride, and β -bromo-, salts, A., 476.
- β -Sulphoacrylic acids, and their salts, A., 961.
- p*-Sulphobenzeneazoisoquinoline, amino-hydroxy-, acetyl derivative, A., 1509.
- 2-Sulphobenzylcyclopentylidene-1-malonamic acid, ethyl ester, A., 977.
- β -Sulphobutyric acid, A., 961.
- β -Sulphocrotonic acid, and its salts, A., 961.
- β -Sulphocrotonic acid, α -bromo-, and α -chloro-, salts of, A., 962.
- Sulphodiazobenzene 2-naphthyl sulphide, and its sodium salt, A., 1490.
- p*-Sulphodiazobenzene *p*-tolyl sulphide, sodium salt, A., 1490.
- 4-Sulpho-1-diazonaphthalene 2-naphthyl sulphide, and its sodium salt, A., 1490.
- Sulphoglutaconic acid, and its salts, A., 608.
- Sulphohalite, crystal structure of, A., 286.
- Sulpho-*m*-hydroxybenzoic acids, methylation of, A., 339.
- Sulphonal, equilibrium of, with acetanilide and phenacetin, A., 970.
with antipyrine and phenacetin, A., 303.
- o*-Sulphonamidoacet-*p*-toluidide, A., 634.
- 4'-Sulphonamidoazobenzene, 2,4-diamino-, hydrochloride, curative action of, on streptococcal infections, A., 1159.
- o*-Sulphonamidobenzmethylanilide, A., 634.
- o*-Sulphonamidobenzanilide, A., 634.
- o*-Sulphonamidobenzotoluides, A., 634.
- o*-Sulphonamido-*m*-toluidide, A., 634.
- Sulphonation, flask for, A., 639.
by diluted sulphuric acid, reaction kinetics of, A., 863.
- Sulphones, $\alpha\beta$ -unsaturated, A., 1115.
- Sulphonic acids, kinetics of formation of, from dithioacids, A., 174.
production of, (P.), B., 396, 487.
from petroleum, (P.), B., 182.
salts, recovery of, from refining of hydrocarbons, (P.), B., 345.
from mineral oils, B., 132, 438.
aromatic, action of, on amino-acids, A., 1486.
esters, manufacture of, (P.), B., 716.
straight-chain, association in dissociation of, in water, A., 1460.
determination of, in textile and tanning agents, B., 617.
- Sulphonium compounds, kinetics of degradation of, A., 452.
- Sulphon-*o*-toluidides, nitrogen-substituted, preparation of, A., 206.
- Sulphon-*m*- and -*p*-toluidides, *N*-substituted, preparation of, A., 742.
- Sulphonyl fluorides, aromatic, action of Grignard reagents on, A., 739.
groups, exchange of, in thiolsulphonic acids, A., 1114.
- Sulphonylacrylic acid, α -chloro-, A., 476.
- Sulphonylthioethanes, optically active, A., 340.
- Sulphopeptidase of moulds, A., 1166.
- Sulphosalicylic acid, m.p. of, A., 974.
- Sulphosalicylic acids, methylation of, A., 339.
- Sulphosalvarsan, constitution of, A., 997.
production of antimony derivative of, (P.), B., 206.
- Sulphoxides, velocity of oxidation of, by peracetic acid, A., 1464.
- disulphoxides*, catalytic stereoisomerisation of, by charcoal, A., 1130.
- Sulphoxylates, detection of, with resazurin, A., 184.
determination of, potentiometrically, in presence of hyposulphites, A., 1092.
- Sulphur, A., 460; B., 671.
fibrous structure of, A., 285.
atomic factors of, A., 908.
valency angles of, A., 283.
covalency angle of, in organic compounds, A., 1056.
allotropy of, A., 435.
production of, (P.), B., 900, 948.
from pyrites, B., 802.
from carboniferous pyrites, B., 21, 724.
from its compounds, (P.), B., 100.
from the dioxide, B., 544; (P.), B., 307, 591.
from sodium sulphate, B., 99.
mining of, by Frasch process, B., 628.
extraction of, from ores, (P.), B., 900.

Sulphur, recovery of, (P.), B., 100, 590, 948.
 from coal gas, (P.), B., 260.
 from the dioxide, (P.), B., 1093.
 from gases, (P.), B., 227.
 from gases containing hydrogen sulphide, (P.), B., 891.
 from roaster gases, (P.), B., 803.
 from hydrogen sulphide, (P.), B., 148.
 by action of hydrogen sulphide on sulphur dioxide, B., 990.
 from pyrites, ores, etc., B., 849.
 from smelter gases, (P.), B., 306.
 from sulphide ores, (P.), B., 148, 495.
 flotation of, with xanthate collectors, B., 671.
 melting out of, from flotation concentrates, B., 724.
 spectrum of, A., 676.
 effect of magnetic field on absorption spectrum of, A., 1045.
 band spectrum of, A., 1, 1183.
 emission spectrum of, in photographic infra-red, A., 1437.
 K X-ray spectrum of, A., 1046.
 magnetic weakening of fluorescence of, A., 423.
 Zeeman effect and magnetic quenching of fluorescence of, A., 1.
 potential of, A., 584.
 liquid, condensation of, (P.), B., 100.
 vapour, heat capacity, entropy, and free energy of, A., 1454.
 diatomic, molecular heat capacity equation of, A., 1312.
 diffusion of, in iron and steel, A., 692.
 crystals, photo-electric conductivity of, A., 682.
 colloidal, medicinal compositions of, (P.), B., 124.
 isotonic colloidal solution of, for injection, (P.), B., 973.
 hydrosols, dehydration of, A., 700.
 sols, action of, with copper sols, A., 1074.
 with mercury sols, A., 1320.
 threads, stretched and unstretched, mechanical properties of, A., 1218.
 chemistry of, B., 186.
 chemical constant of, A., 574.
 action of, on aromatic amines, A., 1118.
 on potassium amide, in liquid ammonia, A., 179.
 on silver, A., 1212.
 with water, and geochemistry, A., 1470.
 kinetics of reaction of, with hydrogen, A., 307, 586.
 heats of reaction of, with rubber, B., 642.
 insulating power of, A., 683.
 fungicidal properties of, B., 568.
 manufacture of fungicides from, (P.), B., 648.
 toxicity of, to guinea-pigs and rabbits, A., 1022.
 effect of, on merino sheep, A., 1413.
 partition of excretion of, in relation to metabolism, A., 389.
 action of, on gaseous metabolism in man, A., 531.
 amorphous, precipitated, velocity of formation of, A., 1082.
 depurated, preparation of, B., 748.
 monoclinic and rhombic, vapour pressure of, A., 438.
 plastic, (P.), B., 673.
 jointing of clay products with, B., 1143.
 rhombic, absorption spectrum of, A., 136.
 crystal structure of, A., 285.
 vitreous, crystallisation of, A., 154.
Sulphur compounds, thermodynamic properties of, A., 569.

Sulphur compounds, in thermal waters of Pistany, Czechoslovakia, A., 190.
 for use as insecticides, etc., (P.), B., 327.
Sulphur monochloride, constitution of, A., 614.
 dissociation of vapour of, A., 446.
 action of, on linseed oil, B., 509.
 determination of, in vulcanising baths, B., 816.
 chlorides, production of, from sulphide ores, B., 21.
 chlorides and oxychlorides, absorption spectra of, A., 680.
 fluorides and oxyfluorides, A., 460.
 monoxide, A., 51, 593.
 absorption spectrum of, A., 280.
 dioxide, production of, (P.), B., 591.
 in Texas Gulf Sulphur Co. sulphur burner, B., 21.
 and Portland cement, from gypsum, B., 146.
 recovery of, from gas mixtures, (P.), B., 148, 403.
 from waste gases, B., 628, 724.
 from waste sulphuric acid, (P.), B., 900.
 separation of, from fluo gases, (P.), B., 452.
 distillation of mixtures of ammonia, water, and, B., 724.
 spectrum of afterglow of, A., 9.
 absorption spectrum of, A., 427.
 emission and fluorescence spectra of, A., 144.
 near ultra-violet absorption band spectrum of, A., 1188.
 formation of negative ions in, A., 140.
 free energy of, A., 1204.
 heat of solution of, in water, A., 935.
 liquefaction of, from gas mixtures, B., 268.
 liquid, reactions in, A., 1334.
 vapour density of, A., 22.
 equilibrium partial vapour pressure of solutions of ammonia and, B., 628.
 adsorption of, by active charcoal, A., 159, 577.
 solubility of, at low pressures, A., 25.
 in sulphuric acid, A., 292.
 critical solution temperatures of hydrocarbons in, A., 159.
 equilibria of, with calcium oxide and water, A., 168.
 decomposition of, by electric discharge, A., 46.
 addition of, to ethylene derivatives, A., 604.
 oxidation of, in electric discharges, A., 712.
 catalytically, B., 1141.
 catalyst from aluminium chloride for, B., 269.
 chromium contact catalysts for, B., 268.
 effect of silica gel catalyst carrier on, A., 1329.
 vanadium catalysts for, A., 309; B., 268, 991.
 vanadium zeolite catalysts for, (P.), B., 187.
 catalysis of reduction of, by Ural bauxite, B., 802.
 corrosion of iron by acids in presence of, B., 1048.
 reaction of, with calcium oxide, A., 312.
 with olefines, A., 1349.
 with ozone, A., 938.
 with propylene, A., 1349.
 with pyrites, B., 268.

Sulphur dioxide, reaction of, with water under pressure, B., 1091.
 compounds of, with amines, A., 447.
 preservation of fruit with, B., 826.
 toxicity of, to plants, B., 200.
 determination of, A., 948.
 in air, B., 335.
 nephelometrically, A., 948.
 in wines, B., 669.
 trioxide, manufacture of, (P.), B., 991.
 and cement, from phosphogypsum, B., 671.
 treatment of gases for, (P.), B., 544.
 equilibrium of, with calcium oxide and sulphate, A., 303.
 with stannous oxide and water, A., 1323.
 reaction of, with water vapour, A., 40.
Sulphur acids, determination of, in mineral waters, A., 184.
Sulphurous acid, ionisation constant and heat of ionisation of, A., 25.
 adsorption of, by vanadium pentoxide, A., 28.
 and its esters, oxidation of, to dithionates, A., 1090.
 reaction of, with hydrogen sulphide in aqueous and alkaline solutions, A., 51.
 and its salts, detection of, A., 462, 718.
Sulphites, absorption spectra of, A., 280.
 oxidation of, A., 939.
 analysis of mixtures of, with meta-arsenites and with sulphates, A., 1336.
 determination of, potentiometrically, A., 595, 717.
 in presence of hyposulphites, A., 1092.
Hyposulphurous acid, and its salts, decomposition of, A., 460.
Hyposulphites, A., 460.
 reduction of, by yeast, A., 124.
 detection of, with resazurin, A., 184.
 potentiometric titration of, A., 1337.
Sulphuric acid, production of, (P.), B., 591, 947.
 by contact process, B., 670; (P.), B., 494.
 catalysts for, B., 492; (P.), B., 226.
 platinum catalyst on magnesium sulphate for, B., 589.
 vanadic acid catalysts for, B., 898.
 vanadium catalysts for, B., 268.
 by Gaillard-Parrish liquid-phase system, B., 898.
 by lead-chamber process, B., 354.
 corrosion of lead in, B., 722.
 lead chamber reaction for, B., 848.
 in Mills-Packard plant in tropics, B., 801.
 by pressure synthesis, B., 59.
 from waste ferrous sulphate, B., 493.
 from gypsum, B., 23.
 and Portland cement, from gypsum, B., 671.
 from hydrogen sulphide, B., 1140.
 from sulphates and carboniferous pyrites, B., 20.
 in America, B., 99.
 Zinc Co. of Australasia, plant for, B., 450.
 recovery of bismuth salts from dust from, B., 20.
 chromium catalysts for, B., 268.
 treatment of gases for, (P.), B., 629.
 washing of effluent gases from, B., 450.
 lead chambers for, B., 268.

Sulphur:—

Sulphuric acid, production of, corrosion of lead towers and chambers for, B., 20.
 plaster for towers for, B., 308.
 tellurium and selenium in sludgo from, B., 402.
 recovery of, by condensation, (P.), B., 947, 948.
 purification of, (P.), B., 269.
 concentration of, in vitreosil apparatus, B., 451.
 vacuum apparatus for, (P.), B., 543.
 control of, with an electrotitrometer, B., 60.
 purification of smelter gas for, B., 312.
 reactivity and constitution of, A., 564, 710.
 Raman spectrum of, A., 806.
 Raman effect in mixtures of nitric acid and, A., 281, 807.
 polar hydrogen and oxygen in electrolysis of, A., 457.
 activity coefficient of, A., 34.
 partial molal heat of dilution of, A., 36.
 and its chlorides, viscosity of, A., 1064.
 absorption of nitrogen oxides by, A., 308, 1208; B., 402.
 velocity of absorption of unsaturated gases by, in presence of catalysts, A., 1085.
 ions in normal solutions of, A., 582.
 transference numbers in concentrated solutions of, A., 705.
 vapour pressure of solutions of, A., 24.
 resistivity and viscosity of solutions of, A., 169.
 surface tension of aqueous solutions of, A., 930.
 thermodynamics of aqueous solutions of, A., 301.
 equilibrium of, with ammonium sulphate and water, A., 36.
 with nickel sulphate and water, A., 1461.
 mixtures of, with perchloric acid, A., 1474.
 oxidation of, catalysis of, A., 42.
 oxidation of organic compounds by, A., 1210.
 resistance of manganese-chrome Portland cement to, B., 307.
 corrosion of steel by, B., 550.
 calculation of mixtures of oleum and, B., 492.
 function of, in nitration, A., 967.
 activity of, in chromic acid oxidations, A., 1140.
 concentrated, condition of substances dissolved in, A., 931.
 diluted and fuming, viscosity of, A., 816.
 fuming, (*oleum*) Raman spectrum and constitution of, A., 1445.
 absorption of fogs from, A., 818.
 calculation of mixtures of sulphuric acid and, B., 492.
 kinetics of sulphonation with, A., 1465.
 determination in, of fluorine, B., 354.
 waste, recovery of sulphur dioxide from, (P.), B., 900.
 determination of, in aerosols, by electro-filtration, A., 53.
 in presence of aluminium sulphate, A., 186.
 in burner gases, etc., B., 492.
 in presence of copper salts, A., 316.
 in leather, B., 818.
 in tower sulphurous acid, B., 59.
 determination in, of fluorine, B., 354.

Sulphur:—

Sulphates, recovery of, from petroleum refinery wastes, (P.), B., 305.
 absorption spectra of, A., 280.
 mixed crystals of, A., 292.
 diamagnetism of hydrates of, A., 289.
 decomposition pressures of, A., 1204.
 acid, ionisation quotients for, A., 308.
 complex, A., 181.
 insoluble, decomposition of, A., 945.
 natural, fluorescence of, A., 1479.
 triple, hydrated, A., 1471.
 analysis of mixtures of, with sulphites, A., 1336.
 determination of, B., 402.
 potentiometrically, A., 184.
 volumetrically, A., 53, 462, 1472.
 with adsorption indicator, A., 836.
 in brine, B., 671.
 in soluble fluorides, A., 463.
 in plasma, A., 104.
 in water, with potassium palmitate, B., 880.
 turbidimetrically, B., 880.
 in wool, B., 220.
 Persulphates, formation of, electrolytically, A., 831.
 electrolytic apparatus for production of, (P.), B., 1148.
 crystal structure of, A., 152.
 catalysis by silver ions of oxidation of acetone by, A., 939.
 catalytic action of silver on oxidation of manganous salts by, A., 309.
 Thiosulphates, production of, (P.), B., 672.
 velocity of reaction of, with bromo-malonates and -succinates, A., 1207.
 with chloroacetates, action of ions on, A., 309.
 hydrazinates of, A., 594.
 anticoagulating properties of, A., 104.
 bacterial oxidation of, A., 537.
 cultivation of organisms oxidising, A., 126.
 in urine, and their removal, A., 262.
 detection of, A., 836.
 determination of, in urine, A., 1006.
 Dithionates, formation of, by oxidation of sulphurous acid and sulphites, A., 1090.
 velocity of hydrolysis of, A., 828.
 Trithionates, crystal structure of, A., 285.
 Polythionic acids, separation and detection of, A., 316.
 Polythionates, formation of, from thiosulphates by micro-organisms, A., 126.
 decomposition of solutions of, A., 1464.
 Sulphur organic compounds, A., 742, 1241.
 manufacture of, (P.), B., 620.
 heat capacities, entropies, and free energies of, A., 304.
 manufacture of sulphuric acid derivatives of, (P.), B., 263.
 with labile sulphur, effect of, on blood-sugar, A., 1413.
 unsaturated, A., 1115, 1241.
 water-soluble, manufacture of, (P.), B., 985.
 colour reactions of, with ruthenium and osmium compounds, A., 332.
 Sulphur acid ($S:OH_2$), phenyl derivative of, A., 614.
 Sulphur acids, esters, β -chloro-derivatives of, A., 1104.
 Sulphurous acid, esters, A., 79.
 pyrolysis of, A., 1223.

Sulphur:—

Thiosulphurous acid, esters, A., 729.
 Thiosulphates, organic, manufacture of, (P.), B., 13.
 Sulphur detection, determination, and separation:—
 detection of, colorimetrically, A., 184.
 in organic compounds, A., 876.
 determination of, microchemically, A., 369.
 in the atmosphere, B., 207.
 in ferromagnetic alloys, B., 854.
 in grain and feeding-stuffs, B., 1018.
 in iron, slags, etc., potentiometrically, B., 26.
 in iron alloys, B., 272, 311.
 in mineral oils, B., 179, 391.
 in oil fuels, B., 54.
 in ointments, B., 1117.
 in organic compounds, A., 639, 1258.
 in petroleum products, B., 86.
 in powder mixtures and salves, B., 724.
 in pyrites and slags, A., 1473.
 in rain water, A., 1215.
 in rubber, B., 34, 162, 512.
 in slags, by zincate method, B., 723.
 in steel, B., 634, 854.
 in thiolbenzthiazole, B., 162.
 in wool, B., 220.
 and its separation from selenium, A., 1336.
 total determination of, in biological substances, A., 1552.
 determination in, of water, B., 849.
 Sulphur-black, structure of, A., 1384.
 Sulphur dyes. See Dyes, sulphur.
 Sulphur oils, use of, B., 597.
 Sulphuric acid. See under Sulphur.
 Sulphurous acid. See under Sulphur.
 Sulphuryl chloride, preparation of, A., 715.
 Sun, lithium isotopes in, A., 141.
 spectrum of, hyperfine structure in, A., 1292.
 infra-red spectrum of, A., 908.
 ultra-violet spectrum of, and atmospheric ozone distribution, A., 8.
 ultra-violet absorption spectrum of, A., 144, 556.
 ultra-violet radiation intensities of, A., 1298.
 chromosphere of, oxygen lines in, A., 1437.
 Sundew, round-leaved, composition of, A., 420, 1375.
 extraction of, B., 749.
 Sunflowers, production of potassium carbonate and fertilisers from stems of, B., 801.
 Sunflower oil, sulphonation of, B., 1101.
 Sunflower seeds, carbon black for rubber from husks of, B., 861.
 production of xylose from husks of, B., 329.
 from Cyprus, B., 365.
 determination of hull content of press-cakes and meal from, B., 462.
 Sunflower-seed oil, emulsions from, B., 732.
 Sunlight, tropical, action of, on organic compounds, A., 1087.
 Sunoxal. See Quinoline, 8-hydroxy-, sulphate.
 Sunspots, ozone and cycle of, A., 59.
 Superconductivity, A., 20, 154, 814.
 electronic theory of, A., 154.
 properties of rotating loops of, in a magnetic field, A., 1196.
 and diamagnetism, A., 689.
 and thermo-electric effect, A., 1062.
 thermodynamics of, A., 154.

Superconductivity, effect of crystallite size on, A., 1196.
 current distribution in smooth and kinked wires in, A., 1196.
 effect of kinks in wires on, A., 1196.
 of thin films, A., 154.

Superconductors, condition of electrons in, A., 1196.
 magnetic effects in, A., 573.
 electro-magnetic equations for, A., 689.
 ohmic resistance of, A., 1196.
 thermo-electric power between, A., 1196.

Superphosphates, manufacture of, (P.), B., 849.
 by atomising method, B., 802.
 in Germany, B., 451.
 cryolite from waste products in, B., 723.
 determination of fluorine in waste products from, B., 60.
 production of tellurium from dust from, in Odessa factory, B., 723.
 composition and properties of, B., 723.
 conditions for use of, B., 1109.
 loss of manurial value of, after mixture with soils, B., 244.
 response of natural pastures to, B., 167.
 reversion of, in soils, B., 116, 602.
 ammoniation of, (P.), B., 270.
 manurial action of basic slag and, B., 372.
 fertilising efficiency of mixtures of calcium cyanamide and, B., 866.
 from apatite, assimilable phosphoric acid in, B., 60.
 double, ammoniation of, B., 628.
 "triple," manurial trials with, B., 602.
 of U.S.S.R., ammoniation of, B., 493.

Surfaces, structure of, and electron-diffraction, A., 1308.
 X-ray and electronic study of, A., 161.
 physical properties of, A., 1065, 1201.
 study of topography of, by reflexion of light, A., 147.
 energy transformations at, A., 161, 311.
 range of action of forces at, A., 819.
 hot, oxidation and ignition at, A., 1327.
 solid, chemistry of, A., 27, 1316.
 interaction of atoms and molecules with, A., 1070.

Surface energy, experiments on, A., 1316.
 and physico-chemical properties of compounds, A., 21.
 free, and adhesion tension, A., 29.

Surface pressure, equation between concentration and, A., 819.

Surface reactions. See under Reactions.

Surface tension, measurement of, by ring method, A., 467.
 capillary apparatus for, A., 599.
 variation of, with temperature, A., 1193.
 temperature coefficients of thermal expansion and, A., 1070.
 ratio of temperature coefficients of density and, A., 685.
 relation of, to other properties of mixed liquids, A., 817.
 and solubility, A., 1315.
 and solvation, A., 1316.
 in physico-chemical analysis, A., 599.
 of homologous series, A., 697.
 of liquids, temperature coefficient of, A., 283.
 of pure liquids, A., 432.
 of binary liquid mixtures, A., 438.
 of small amounts of liquids, determination of, A., 1342.
 and solvent action of organic liquids, A., 819.
 and molecular structure of liquids and solids, A., 284.

Surface tension of solids, and Antonov's rule, A., 160.
 of solutions, A., 819.
 of ternary solutions, A., 1316.
 of viscous substances, measurement of, B., 885.

Suspensions, production of, (P.), B., 5.
 electro-optical measurement of concentration of, (P.), B., 596.
 recording of density of, (P.), B., 658.
 in gases, production of, (P.), B., 1026.
 stabilised, sedimentation thixotropy of, A., 1320.
 See also Colloidal suspensions.

Suture, surgical, (P.), B., 286.

Sweat, absorption of light by, A., 1268.
 effect of, on leather, B., 1058.
 human, composition of, A., 513, 1147.
 distribution of organic acids in, A., 649.

Swedenborgite, crystal structure of, A., 1308.

Sweetening materials, synthetic, micro-analysis of, B., 261, 330.

Swelling, pressure of, A., 581.
 thermodynamics of, A., 300.

Swimming-baths, testing of water for, B., 80.

Swine. See Pigs.

Sylvine, diffuse scattering of X-rays from, A., 151.
 crystals, plasticity of, A., 956.

Sylvinite, production of potassium sulphate from, B., 801.
 Solikamsk, production of bromine from, A., 583.

Sympathin, production of, in liver, A., 788.
 calorogenic action of, A., 1405.

Sympathol, effect of, on action of adrenaline, A., 1173.

p-l-Sympathol, action of, and of adrenaline, A., 539.

Sympathomimetic substances, effect of ultra-violet light on, A., 1173.

Synephrine, effect of ultra-violet light on, A., 1173.

Synergist, pituitary, effect of, with prolan, on reproductive organs, A., 541.

Syntax and polytypy, A., 1453.

Synthesis, asymmetric, A., 975, 1358.

Syphilis, chemistry of antigen of, A., 886.
 gel formation in sera of, A., 508.
 chemotherapy of, A., 109.
 treatment of, A., 1403.
 compounds for, (P.), B., 125.
 quinine mercury compound for, (P.), B., 1165.

Syringes, measuring, A., 717.

Syrups, phosphate, hypophosphite, and glycerophosphate, determination in, of phosphorus, B., 262.
 starch. See Starch syrups.
 sugar. See Sugar syrups.

Systems, diagram of state for, A., 167.
 binary, region of non-miscibility of, in surface tension-concentration diagrams, A., 928.
 selective adsorption from, A., 1315.
 heterogeneous, A., 25, 292, 695.
 inorganic, application of thaw-melt method to, A., 1322.
 capillary. See Capillary systems.
 colloidal. See Colloidal systems.
 difform and disperse, X-ray analysis of, A., 162.
 disperse, B., 177.
 viscosity and plasticity of, A., 444, 579, 701, 820, 932, 1318.
 X-ray and electron analysis of, A., 162.
 lamellar, X-ray analysis of, A., 163.

Systems, heterogeneous, interface equilibria and inner equilibria in, A., 161.
 ionic, disperse, extension of complex coacervation theory to, A., 1320.
 laminar, A., 161, 1317.
 liquid, small, division of, A., 1318.
 ternary, A., 704.
 peritectic and eutectic in, A., 448.
 solubility of components of, A., 929.
 thermal equilibria of, A., 36, 303, 448, 970, 1078.
 determination of tie lines in, A., 59.
 containing congruently melting binary compounds, A., 1323.
 with two solid phases and one gaseous, reactions in, A., 312.
 organic, A., 303.
 solid-liquid equilibria in, A., 825.
 two-phase, instability of, A., 1318.
 liquid, velocity of reaction in, A., 1328.
 viscous, change of state of, A., 438, 575.

T.

Tablets, micro-press for, A., 465.

Tadpoles, action of thyroxine on, A., 1285.

Tania saginata, composition of, A., 646.

Taka-amylase, A., 1415, 1535.

Taka-diastase, hydrolysis of polysaccharides by, A., 1535.
 action of, on starch, A., 1415.

Talc, separation of, from magnesite by flotation, (P.), B., 673.
 adsorption of isovaleric acid by, and its flotation, A., 820.
 mixtures of cement and, B., 271.
 use of, in ceramic bodies, B., 804.
 production of refractories from, B., 768.
 Georgia, effect of dusts from mills and mines for, B., 926.
 from N. Carolina, A., 725.

Tall oil, refining of, (P.), B., 1150.

Tallow, synthetic, manufacture of, B., 859.
 detection in, of chlorophyll, B., 276.

d-Talonolactone, diacetone derivative, A., 734.

d-Talose, and its diacetone derivative and *o*-nitrophenylhydrazone, A., 734.

Tamarigite, occurrence of, in Missouri, A., 1345.

Tangerine oil, A., 267.
 Florida, B., 254.

Tannalbin, determination of, B., 700.

Tanneries, chemical-technical problems in, B., 601.

Tannic acid, pharmacology of, A., 395.

Tannides, salting-out vat solutions of, B., 419.
 sulphite-cellulose, determination of, in presence of oak tannides, B., 241.
 determination of, in tanning extracts, by azotisation with diazotised amines, B., 419.
 volumetrically, with chromic acid, B., 71.

Tannins, constitution of, A., 218.
 and similar compounds, A., 867.
 in cottonseed hulls, B., 469.
 from green tea, A., 673.
 in maté, B., 476.
Saxifraga crassifolia as source of, B., 963.
 in Philippine woods and their bark, B., 469.
 in plants, B., 419.
 extraction of, from wood, B., 798.
 control of, B., 819.

- Tannins**, effect of p_H of tanning liquors on rate of fixation of, B., 817.
 Raman spectrum of solutions of, A., 1446.
 use of, in wine-making, B., 1016.
 hydrolysable (pyrogallol), determination of, in presence of condensed (pyrocatechol) tannins, B., 862.
 Japanese dyeing, B., 846.
 quebracho, manufacture of decolorising charcoal from residues from, B., 1079.
 synthetic, determination of acidity of, B., 916.
 vegetable, properties of, B., 1008.
 conversion of, into anthocyanidins, B., 739.
 fluorescence adsorption analysis of, B., 1007.
 analysis of, B., 963.
 qualitative analysis of, B., 1007.
 quantitative analysis of, B., 862, 1007.
 determination of, volumetrically, by Lee's method, B., 70.
 in plants, A., 673.
 in wines, B., 695.
 determination in, of non-tans, using kaolin, B., 1007.
- Tannins**, halogen-. See Halogen-tannins.
- Tannin esters**, water-soluble, manufacture of, (P.), B., 237.
- Tannin extracts**, vegetable, determination in, of copper, B., 469.
 determination of total sulphur dioxide set free by acid from, B., 739.
- Tanning**, (P.), B., 819.
 theory of, B., 863.
 apparatus for, (P.), B., 929.
 in the palaeolithic age, B., 916.
 in gelatin, A., 301.
 theories of chemistry of, B., 863.
 physical chemistry of, B., 863.
 formation of hydrogen sulphide and carbon dioxide in pits for, B., 114.
 drenches for, B., 35.
 after pretreatment with buffer solutions, B., 114.
 of hides and skins, (P.), B., 864.
 with complex aluminium salts, B., 469.
 with "chromal," B., 469, 817.
 with complex chromium salts, B., 863.
 with sulphite-cellulose extract, in Stalin tannery, Mogilev, B., 817.
 titanium compounds for use in, (P.), B., 147.
 with vegetable tannides, B., 686.
 chrome, (P.), B., 1009.
 theory of, B., 323.
 effect of pickles on chromium absorption in, B., 644.
 of gelatin, B., 818.
 one-bath, chemical control of, B., 916.
 two-bath, B., 817.
 "first bath" of, B., 419, 600.
 combined chrome-vegetable, B., 1008.
 chromium-iron, reaction of iron and chromium salts with collagen in, B., 419.
 drum, of hides, B., 916.
 mineral, theory of, B., 818, 1008.
 sulphur, B., 1008.
 vegetable, theory of, B., 818.
 elimination of mineral acid from pickled skins in, B., 281.
- Tanning agents**, manufacture of, (P.), B., 348, 513.
 aluminates as, B., 564.
 substituted naphthalenesulphonic acids as, B., 738.
 synthetic, manufacture of, (P.), B., 564.
 light-fast, (P.), B., 469.
- Tanning agents**, vegetable, electrochemical properties of, B., 863.
 treatment of, (P.), B., 469.
 determination in, of sulphonic acids, B., 617.
- Tanning extracts**, manufacture of, from avaram bark, B., 35.
 from sulphite-cellulose waste liquors, B., 1007.
 peptisation in solutions of, B., 563.
 oak-bark, tanning of semi-raw hides with, B., 739.
 production of lactic acid from, B., 419.
 sulphite-cellulose, fixation of tannides from, B., 419.
 vegetable, action of, on properties of leather, B., 564.
 acids in, B., 1007.
 determination in, of chromium, B., 819.
- Tanning liquors**, chrome, B., 564, 862, 1105.
 vegetable, staining of leather by iron in, B., 197.
 willow, effect of salts on swelling in, B., 469.
- Tanning materials**, production of, (P.), B., 163.
 from peat, B., 419.
 weighting of silk with, B., 626.
 "Bestan AS," B., 70.
 composite, theory and practice of, B., 644.
 German, refining of, B., 114.
 Indian, B., 35.
 synthetic, manufacture of, (P.), B., 777.
 use of, for hard and soft leather goods, B., 70.
 from peat tar, B., 819.
 vegetable, effect of non-tans on tanning with, B., 35.
 action of micro-organisms on, B., 419.
 raw, extraction of, for analysis, B., 1105.
 analysis of, B., 819.
 fluorescence adsorption analysis of, B., 513.
 qualitative analysis of, B., 419.
- Tanning solutions**, determination in, of insoluble matter, centrifugally, B., 419.
- Tan-shin**, A., 754.
- Tan-shinones**, and their derivatives, A., 754.
- Tantalum**, B., 1146.
 at. wt. of, A., 140.
 hyperfine structure and nuclear moment of, A., 137.
 metallography of, B., 65.
 L X-ray spectrum of, A., 676.
 L -series X-ray absorption spectrum of, A., 272.
 electrodeposition of, A., 711, 831.
 heat of vaporisation of electrons for, A., 801.
 secondary electron omission from, A., 4.
 thermionic properties of, A., 801.
 oxygen content and potential of valve layers of, A., 430.
 ductile, production of, B., 678.
- Tantalum alloys** with iron, A., 1199.
- Tantalum carbide**, manufacture of alloys of, (P.), B., 362.
 cemented, impact abrasion hardness of, B., 1094.
 pentachloride, action of liquid ammonia on, A., 1090.
 action of, on organic compounds, A., 73.
 pentoxide, analysis of mixtures of, with niobium pentoxide, A., 1096.
- Tantalum determination**:-
 analysis of, A., 838, 1217.
- Tar**, production of, B., 708.
 from coal in coke ovens, B., 979.
 and water-gas, (P.), B., 711.
 treatment of, (P.), B., 260, 1033.
 recovery of phenols from, B., 56.
 removal of tar acids from, (P.), B., 294.
 coking of, (P.), B., 88.
 cracking of, (P.), B., 662.
 distillation of, (P.), B., 88, 180, 343, 538, 758, 936, 983, 1033.
 viscosity-temperature characteristics of, B., 1029.
 liquid hydrogen sulphide as selective solvent for mineral oils and, B., 581.
 production of dispersions of, (P.), B., 758.
 mixtures of bitumen and, for roads, etc., (P.), B., 662.
 measurement of surface tension of, B., 885.
 binding action of, B., 535.
 lubricating qualities and cementing power of, and design of tar-sand carpets, B., 54.
 dehydration of, (P.), B., 88.
 destructive hydrogenation of, (P.), B., 180, 616, 790, 891.
 low-temperature hydrogenation of, B., 86.
 production of aqueous emulsions of, (P.), B., 88.
 production of ethylene from, B., 6.
 removal of, from glass apparatus, B., 131.
 beechwood, from the Polish Carpathians, B., 613.
 birch-bark, effect of exposure to air on constants of, B., 708.
 brown-coal, hydrogenation of, B., 391.
 production of benzene from, B., 293.
 Tcheliabinsk primary, destructive hydrogenation of, B., 789.
 Chermukhov, gasoline from, B., 54.
 reduction of phenols in, B., 54.
 coal, formation and composition of, B., 708.
 recovery of constituents of, (P.), B., 393.
 treatment of, with sulphuric acid, for roads, B., 1028.
 separation of cresols from, B., 839.
 removal of naphthalene from oils from, B., 1080.
 coking of, B., 789.
 refining of light oils from distillation of, (P.), B., 1126.
 hydrogenation of, B., 292.
 begrinisation of anthracene fraction of, B., 790.
 free carbon in, B., 790.
 isolation of 1:2-dimethylnaphthalene from, A., 334.
 triphenylene in, A., 1358.
 preservation of wood with creosote oil from, B., 852.
 occurrence and uses of products from, B., 6.
 use of products from, for insulation and constructional work, B., 1028.
 solvents from, B., 598.
 Indian, B., 535.
 determination of benzonitrile in oils from, B., 790.
 coal and shale, hydrogenation of, B., 790.
 coke-oven, distillation of, B., 660, 1080; (P.), B., 343.
 crude, acid treatment of, B., 438.
 gelatinised, B., 86.
 heavy, laboratory apparatus for hydrogenation of, B., 178.
 Kashpira, hydrogenation of, B., 790.
 destructive hydrogenation of, B., 53, 54.

- Tar, low-temperature, blending of coal for production of, B., 884.
 from bituminous coal, B., 390.
 high-pressure hydrogenation of, B., 613, 836.
 phenols of, B., 437.
 low-boiling phenols from, B., 391.
 catalytic hydrogenation of neutral oil from, B., 933.
 catalytic hydrogenation of phenolic oil in, B., 259.
 products of hydrogenation of phenolic oil in, B., 259.
 peat, acid treatment of, B., 438.
 hydrogenation of, B., 933.
 synthetic tanning materials from, B., 819.
 from Petrograd shale, acidic fractions of, B., 53.
 "pressure," hydrogenation of, (P.), B., 393.
 primary, separation of solid bitumens from, B., 53.
 refining of gasoline from, B., 54.
 recovery of phenols from, B., 984.
 autoxidation and reduction of light fractions of, B., 708.
 road, viscosity-consistence of, B., 1080.
 mixtures of rubber with, (P.), B., 644.
 ageing of, B., 535, 1080.
 sapromyxite, gasoline from, B., 53.
 sapropelite, gasoline from, B., 53.
 steel-works, testing of, B., 708.
 stump, gasoline extract from, B., 1029.
 from Tcheliabinsk lignites, B., 53.
 from Ukrainian lupulin, B., 933.
 Veimarn slate, use of, as softener in rubber mixtures, B., 861.
 wood, production of pyrocatechol and pyrogallol from, B., 1028.
 analysis of, B., 535.
 detection of, in dusts, B., 526.
 determination in, of free carbon, colorimetrically, B., 341.
- Tar acids, recovery of, (P.), B., 260.
 coal, treatment of, (P.), B., 214.
- Tar oils, refining of, (P.), B., 344.
 extraction of phenols from, B., 437.
 production of sulphonation products from, (P.), B., 937.
- Tar products, manufacture of, for roads, (P.), B., 1083.
 mixing of, with rubber, B., 790.
- Tarsonemus*, control of, on ornamentals, B., 778.
- Tarsonemus fragariae*, control of, on strawberries, B., 1013.
- Tartar, dental. See under Teeth.
- Tartar emetic, complex salts of, B., 312.
- Tartaric acid, and its esters and salts, Raman spectra of, A., 146.
 partition of citric acid and, between water and isoamyl alcohol, A., 293.
 methylation of, with diazomethane, A., 196.
 salts, insoluble, transposition of, by means of sodium carbonate solution, A., 731.
 bivalent metal salts, A., 315.
 calcium salt, determination in, of potassium salt, B., 1129.
 potassium sodium salt. See Rochelle salt and Seignette salt.
 benzylamine ester, optical rotation of, in acetic acid, A., 1447.
 dimethylene ester, rotation of, A., 1192.
 ethyl ester, effect of metacetaldehyde on rotation of, A., 1107.
 complex formation of, with aluminium and with manganese, A., 961.
- Tartaric acid, bismuth compounds of, A., 608.
 colour reaction of, A., 961, 1516.
 r-Tartaric acid, activation of, by active malic acid, A., 731.
 chloralide, A., 328.
- Tartaric acids, ionisation constants of, A., 34.
- Tartaromanganic salts, A., 475.
- Taste, relation between constitution and, A., 780.
 threshold differences in, A., 1023.
- Taurine, solubility of, in water, A., 695.
- Tautomerism and acidity, relation between, A., 334.
 β -epoxy-, in degradation of organic compounds, A., 1103.
 prototropic, in ketones, A., 569.
 three-carbon, mechanism of, A., 1350.
- Taxin, pharmacology of, A., 1157.
- Tea, yield of, B., 778.
 drying of, B., 747.
 withering of, (P.), B., 173.
 cold withering of, B., 78.
 action of hexenol from, A., 1159.
 iodine content of, A., 1042, 1436.
 removal of theine from, (P.), B., 605.
 tyrosinase in, A., 532.
 black, odour of, B., 428.
 essential oil of, A., 1289.
 green, odorous principles of, A., 267, 796.
 crystalline tannin from, A., 673.
 Japanese green, antiscorbutic activity of ascorbic acid from, A., 793.
- Tea plants, composition of leaves and leaf stems of, B., 826.
 fertiliser trials with, in Ceylon, B., 245.
 soils for, B., 1009.
 in China, Formosa, and Japan, B., 1009.
- Tea-seed oil, B., 859.
- Tea-tree oils, Australian, B., 174.
- Teak, Burma, damage of, by marine borers in Rangoon River, B., 102.
- Tealia felina*, carotenoids of, A., 1005.
- Tears, effect of chloride in diet on sodium chloride content of, A., 378.
- Teeth, composition of, A., 234.
 cholesterol and lecithin in, A., 377.
 copper content of, A., 234.
 normal fluorine content of, A., 234.
 luminescence of, A., 234.
 effect of fluorine in water on, A., 399.
 decalcification of, by mouth bacteria, A., 1420.
 decay of, as indicator of faulty diet, A., 1148.
 mottled enamel of, A., 896.
 in Iowa, A., 1413.
 structure of tartar on, A., 1004.
 etiology and histology of tartar on, A., 1396.
 pastes and powders for removal of tartar from, B., 1168.
 artificial, ceramic material for, B., 674.
 use of porcelain and glass in, B., 227.
 carious and sound, molybdenum content of, A., 1004.
 deciduous, mottled enamel of, A., 531.
 of fish, effect of fluorine in water on, A., 1413.
 of new-born infants, chemistry and histology of, A., 882.
 white rat's, effect of sodium fluoride on, A., 399.
 analysis of samples of, A., 511.
- Tegula xanthostigma*. See Kumanokogi.
- Tektites, origin of, A., 1102.
 from Indo-China, A., 1102.
 spectroscopic analysis of, A., 842.
- Teleostei*, size, fat, and vitamin-A content of liver in, A., 414.
- Telephones, overhead transmission line for, (P.), B., 108.
- Television, luminophores for, A., 565.
 rapid photography for, (P.), B., 831.
- Tellurates. See under Tellurium.
- Telluric acid. See under Tellurium.
- Tellurites. See under Tellurium.
- Tellurium, at. wt. of, A., 801.
 discovery of, A., 1343.
 isotopes, nuclear moments of, A., 424.
 production of, from Cottrell dust of the Odessa Superphosphate Factory, B., 723.
 magnetic weakening of fluorescence of, A., 423.
 Zeeman effect and magnetic quenching of fluorescence of, A., 1.
 isoelectric sequences in, A., 2.
 electron properties of, A., 566.
 ionised, spectrum of, A., 1183.
 atomic energy of, A., 907.
 effect of high pressures on, A., 567.
 vapour, excitation of resonance spectrum of, A., 137.
 induced predissociation of, A., 272.
- Tellurium alloys, for electric rectifiers, (P.), B., 911.
- Tellurium hexafluoride, infra-red spectrum and force constants of, A., 680.
 vapour pressure of, A., 438.
 nitride, A., 181.
- Telluric acid, structure of, A., 1056.
 and its alkali salts, colour and molecular state of, in aqueous solution, A., 444.
- alloTelluric acid, and its derivatives, A., 834.
- Telluric acids, nomenclature of, A., 1090.
- Tellurates, A., 834.
- Tellurites, electro-reduction of, A., 456.
- Tellurium organic compounds, A., 716.
- Tellurium detection and determination:—
 detection of, A., 53, 718.
 determination of, microchemically, A., 100.
 spectrographically, A., 719.
 in lead, B., 64, 459.
 in selenium sludge of sulphuric acid factories, B., 402.
- Temperature, measurement of, (P.), B., 85.
 with photo-electric cells, A., 1474.
 with thermocouples, B., 1025.
 measurement and regulation of, B., 1025.
 apparatus for control of, (P.), B., 657.
 automatic control of, with valve relays, A., 187.
 thermodynamic scale of, A., 1339.
 below 1°, A., 1217.
 devices for continual alteration of, A., 319.
 of gases, high-velocity thermocouple for determination of, B., 257.
 of flowing liquids, determination of, (P.), B., 1074.
 constant, bath for maintaining apparatus at, A., 1339.
 critical, determination of, A., 437.
 high, production of, A., 951.
 regulators for, A., 319.
 low, production of, A., 721, 1096; (P.), B., 977.
 magnetically, A., 187, 465.
 by magnetic cooling, A., 290.
 lowest, A., 598.
- Tendon, X-ray structure of, A., 1266.
 "slipped," in chicks, egg-yolk and chicken-fat as preventives of, A., 1403.

- Tenebrio molitor*. See Meal-worms.
- Tennis racquets. See under Racquets.
- Tenorite, crystal structure and optical properties of, A., 813.
- Tephrosia vogelii*, poisonous constituents of seeds of, A., 221.
- Tephrosins, constitution of, A., 221.
- allo*Tephrosins, and their acetyl derivatives, A., 221.
- allo*Tephrosindicarboxylic acid, and its derivatives, and isomeride, A., 221.
- Teramus labialis*, constituents of, A., 132.
- Teratoma testis, gonadotropic hormone in urine in, A., 542.
- Terbium, at. wt. of, A., 909.
- Terbium compounds, production of, A., 180.
- Terbium salts, magnetic birefringence of paramagnetic solutions of, A., 149.
- Terebinth, biochemistry of aphides of, A., 1523.
- Terephthalic acid, dihexyl ester, A., 740.
- Terephthaltriphenylmethylhydrazide, A., 78.
- Terephthalylbisazotriphenylmethane, A., 78.
- Teresantalic acids, A., 350.
- Teresantalol, A., 865.
- β -Teresantallylpropionic acid, and its silver salt and methyl ester, A., 756.
- Termites, control of, on banked citrus trees, B., 1158.
- Termopsis nevadensis*, respiratory exchange in, A., 371.
- Terpenes, optical rotatory dispersion of, A., 496.
- Raman effect in, A., 564.
- chemistry of, A., 983.
- cryoscopic properties of, A., 436.
- and related compounds, catalytic action of active carbon on, A., 1375.
- production of therapeutically active tetrazole derivatives of, (P.), B., 830.
- removal of, from essential oils, B., 701.
- biogenesis of, A., 351.
- ketonic, preparation of, and their reaction with hydrogen sulphide, A., 348.
- Raman spectra of, A., 429.
- reaction of, with acetylene and its dimagnesium derivative, A., 349.
- volatile, from hydrolysis of saponins, A., 1503.
- Terpene alcohols, manufacture of ozonation products of, (P.), B., 92.
- Terpene compounds, A., 756, 1246.
- Terpene oxides, isomerisation of, A., 1245.
- Terpene series, syntheses in, A., 609.
- Terra cotta, kilns for burning of, (P.), B., 228.
- bodies, standardisation of tests for, B., 406.
- Terra di Sienna, determination in, of calcium oxide, B., 366, 465.
- Terrein, A., 662.
- Testicles, regeneration of, degenerated by menformone, A., 239.
- changes in pituitary in atrophy of, A., 542.
- action of prolan and folliculin on, A., 791.
- crystalline male hormone from, A., 1033.
- boar, male hormone from, A., 1032.
- bull, oestrogenic substance in, A., 1173.
- normal and ectopic, folliculin content of, A., 259.
- rabbit's, reduced glutathione in, A., 511.
- Testosterone. See Δ^1 -Androsten-17-ol-3-one.
- Testudo graeca*. See Tortoise, Greek.
- Tetanus antitoxin of antitetanic plasma, thermal destruction of, A., 1169.
- antitoxins, precipitation of, from metal-protein complexes, A., 1003.
- Tetanus toxin, combination of, with blood-proteins, A., 105.
- action of bile acids on, A., 1395.
- action of, on muscle-potassium of guinea-pigs, A., 528.
- toxoid, aged and fresh, as immuniser, A., 1169.
- Tetany, produced by milk diet, A., 386.
- acute and chronic, production of calcæmia in, by injection of calcium gluconate, A., 1011.
- equine transit, hypomagnæsemia in, A., 1270.
- grass, etiology of, A., 1270.
- human, blood-iodine in, A., 1011.
- from hyperventilation, blood-ammonia in, A., 1011.
- infantile, alkalosis and phosphorus retention in, A., 1011.
- low-calcium, treatment of, with calciferol, A., 1430.
- 5:5'-Tetra-acetyl/*l*-amino-4:4'-diacetoxydiphenylmethane, A., 339.
- 2:3:4:6-Tetra-acetylglucose, syntheses with, A., 1108.
- 2:3:4:6-Tetra-acetylglucosidyl nitrite, A., 1108.
- Tetra-acetyltri-indole, A., 503.
- 2:3:5:6-Tetra-acetyl-*p*-xylene, A., 982.
- Tetra-alkylammonium salts, conductivity of, A., 705.
- ak*-Tetra-*n*-amyl/*l*-amino-*n*-decane, and its hydrochloride, production of, (P.), B., 974.
- ak*-Tetraisoamyl/*l*-amino-*n*-decane, (P.), B., 974.
- α -Tetra-*n*-amyl/*l*-amino-*n*-undecane, (P.), B., 974.
- Tetrabenzocyclohexane-1:6-dione, A., 341.
- Tetrabenzocyclohexane-9:10-dihydroxy-9:10-dihydro-naphthalene, A., 341.
- Tetrabenzocyclohexane-1:6-dihydroxy-1:6-dimethylcyclohexane, A., 341.
- 2:2:6:6-Tetrabenzocyclohexanone derivatives, A., 621.
- Tetrabutyltetraethio-orthosilicate, A., 326.
- ak*-Tetra-*n*-butyl/*l*-amino-*n*-decane, and its tartrate, production of, (P.), B., 974.
- am*-Tetra-*n*-butyl/*l*-amino-*n*-dodecane, (P.), B., 974.
- am*-Tetra-*n*-butyl/*l*-amino-*n*-heptane, (P.), B., 974.
- α -Tetra-*n*-butyl/*l*-amino-*n*-tridecane, (P.), B., 974.
- Tetracarboxyanines, A., 634.
- Tetradecolactone, *v*-hydroxy-, A., 1351.
- Tetradecolactone, *v*-hydroxy-, A., 1351.
- Tetradecyl bromide, preparation of, A., 193.
- 8:9:16:17-Tetradecahydrocorydalinium iodide. See 2:3:11:12-Tetramethoxy-16-methyl-8:9:16:17-tetradecahydroberberinium iodide.
- Tetradeuteromethane, gaseous, Raman spectrum of, A., 914.
- Tetradeuterostearic acid, A., 1407.
- Tetradymite, crystal structure of, A., 17.
- from Inyo Mts., California, A., 956.
- 6:7:3':4'-Tetraethoxy-1-benzylisoquinoline, manufacture of, (P.), B., 382.
- 2:7-Tetraethyl/*l*-aminoanthraquinone, A., 87.
- 2:4-Tetraethyl/*l*-aminoazobenzene-4'-sulphondimethylamide, manufacture of, (P.), B., 829.
- Tetraethylamminoplatinum chloride, red, A., 182.
- Tetraethylammonium bromide, tetra- β -hydroxy-, and its reaction with hydrobromic acid, and its tetra-acetyl derivative, bromide, A., 71.
- Tetraethyl-*p*-benzoquinone, A., 1114.
- Tetraethylspirodihydantoin, A., 225.
- Tetrafurtyldiarsine sulphide, A., 997.
- ak*-Tetra-*n*-heptyl/*l*-amino-*n*-decane, (P.), B., 974.
- ak*-Tetra-*n*-hexyl/*l*-amino-*n*-decane, (P.), B., 974.
- Tetrahydroabietic acid, A., 218.
- 1:2:3:6-Tetrahydroacetophenone, 4(or 5)-chloro-, and its semicarbazone, (P.), B., 622.
- Tetrahydroanacardic acid, and its esters and derivatives, A., 1123.
- Tetrahydroanacardol, and its derivatives, A., 1123.
- 1:4:5:8-Tetrahydroanthracene, 2:6-dichloro-9:10-hydroxy-, diacetate, (P.), B., 622.
- 1:4:4':9'-Tetrahydroanthraquinone, 2-bromo-, and 2-chloro-, (P.), B., 622.
- 2:6- and 2:7-dichloro-, (P.), B., 622.
- 1:4:11:12-Tetrahydroanthraquinone, 2-hydroxy-, acetyl derivative, A., 473.
- 1:2:3:6-Tetrahydrobenzaldehyde, 4(or 5)-chloro-, and its semicarbazone, (P.), B., 622.
- 1:2':3':4'-Tetrahydro-1:2-benzpyrene, and its picate, A., 741.
- 3:4:5:6-Tetrahydrobenzpyrimidine, 11-thiol-13-hydroxy-, A., 763.
- Tetrahydrocarvone, condensation of, with ethyl oxalate, A., 755.
- l*-Tetrahydrocarvone 2:4-dinitrophenylhydrazone, A., 755.
- Tetrahydro- β -caryophyllene, amino-, A., 90.
- Tetrahydro- ψ -cedene methyl ether, and its hydride, A., 505.
- Tetrahydroallo- ψ -codine, and its salts, A., 99.
- Tetrahydrocyclamiretin, and its triacetate, A., 348.
- 9:10:9':10'-Tetrahydro-1:1'-dianthryl-2:2'-dicarboxylic acid, A., 1132.
- 1:2:3:4-Tetrahydro-2:3-dimethylphenanthrene, A., 1358.
- 3:4:3':4'-Tetrahydro-1:1'-dinaphthyl, A., 1244.
- Tetrahydro-1:2:3:4-dicyclopentenoanthraquinone, A., 1244.
- Tetrahydro-5:6:7:8-dicyclopenteno-1:4-naphthaquinone, A., 1244.
- 1:2:3:6-Tetrahydro-3:4:5:6-dicyclopentophthalic anhydride, A., 1244.
- Tetrahydrodiphenyl, constitution of, A., 1299.
- Tetrahydrofurfuryl derivatives, ring fission in, A., 866.
- 1-Tetrahydrofurfurylpiperidine, and its hydrochloride, A., 71.
- Tetrahydrofuroylacetyl methane, A., 198.
- α -Tetrahydrofurylbutane- α - γ -diol, A., 198.
- α -Tetrahydrofurylbutan- γ -ol, A., 199.
- Tetrahydroharman derivatives, synthesis of, A., 224, 1388.
- 1:2:3:4-Tetrahydrocyclohexane, A., 746.
- Bz*-Tetrahydroindoles, A., 870.
- Tetrahydroionone, unsaturated compounds from, A., 492.
- Tetrahydromanone, and its derivatives, A., 1127.
- Tetrahydromanol, A., 1127.
- Tetrahydro-*c*-methylmorphimethine methyl ether, A., 505.
- Tetrahydro-*c*-methylmorphimethine-*A* methyl ether, and its hydrochloride, A., 505.
- Tetrahydro- ζ -methylmorphimethines, and their salts, A., 99.
- Tetrahydro- β -isomorphine, and its perchlorate, A., 505.
- Tetrahydronaphthalene (*tetralin*), dipole moment of, A., 1447.
- Raman spectra of, A., 11, 914, 1446.

- Tetrahydronaphthalene, solvent power of decalin, hexalin, methylhexalin, and, B., 1036.
effect of phenols and naphthols on autoxidation of, B., 12.
use of, against clothes moths, B., 224.
peroxide, preparation of, A., 481.
differentiation of decahydronaphthalene and, A., 1116.
- 5:6:7:8-Tetrahydronaphthalene, 2-nitroso-, A., 482.
- 1:2:3:4-Tetrahydronaphthalene-7-carboxylic acid, 6-hydroxy-, A., 1495.
- 4:5:8:8'-Tetrahydro-1:4-naphthoquinone, 6-chloro-, production of, (P.), B., 621.
- 4:5:8:7-Tetrahydro-*lin*-naphthatriazole, and its derivatives, A., 761.
- 1:2:3:4-Tetrahydro-6-naphthodiphenylamide, A., 335.
- Tetrahydro- β -naphthylamine, effect of, on creatine, creatinephosphoric acid and lactacidogen of red and white mice, A., 1532.
- β -1:2:3:4-Tetrahydro-1-naphthylethyl alcohol, A., 1495.
- β -5-Tetrahydronaphthylethyl alcohol, and its derivatives, A., 75.
- 3-(β -5'-Tetrahydronaphthylethyl)-2:4-dimethyl-7-isopropylindene, and its dipicrate, A., 75.
- 3-(β -5'-Tetrahydronaphthylethyl)-2-methylindene, and its picrate, A., 75.
- 1-(β -5'-Tetrahydronaphthylethyl)-7-methyl-4-isopropylhydriindene, 1-hydroxy-, A., 75.
- 5:6:7:8-Tetrahydronaphthyl-2-hydroxylamine, A., 482.
- Tetrahydro-*p*-phenanthroline, and its salts, A., 631.
- 1:2:3:4-Tetrahydrophenazine, A., 224.
- 4¹-Tetrahydro-*o*-phthalic acid, derivatives of, A., 82.
- 1:2:3:6-Tetrahydrophthalic acid, 4-bromo-, (P.), B., 622.
4-chloro-, and its diethyl ester, (P.), B., 622.
- Tetrahydropyran, 2-bromo-, and 2:3-di-bromo-, and its reaction with sodium hydroxide and lead nitrate, A., 220.
- Tetrahydropyrroles, dehydrogenation of, A., 627.
- Tetrahydroperiquinoliazole, attempted synthesis of, A., 93.
- Bz-Tetrahydroquinolines, synthesis of, A., 222.
- Tetrahydroisoquinolines, synthesis of, A., 357.
- Bz-Tetrahydroisoquinolines, syntheses of, A., 628.
- 5:6:7:8-Tetrahydroisoquinoline, 3-hydroxy-, A., 628.
- 5:6:7:8-Tetrahydroisoquinoline-3-carboxylic acid, A., 1138.
- Tetrahydroantylacetic acid, and its derivatives, and bromo-, A., 756.
- Tetrahydrostrychnine, hydrogenation of, A., 367.
- Tetrahydrothermopsine methiodide, A., 872.
- 4³-Tetrahydro-*p*-tolualdehyde, A., 974.
- 4³-Tetrahydro-*p*-toluic acid, and its ethyl ester and derivatives, A., 974.
- 4³⁽⁴⁾-Tetrahydro-*p*-toluic acid, 3-chloro-, A., 974.
- 1:2:3:4-Tetrahydroxanthylum ferriehloride, A., 1377.
- Tetrahydroxybyrine, A., 367.
- $\alpha\gamma\epsilon$ -Tetraketo-octic acid, A., 733.
- Tetrakisazo-dyes, containing copper, (P.), B., 397.
- Tetralin. See Tetrahydronaphthalene.
- Tetralupine, and its *d*-camphorsulphonate, A., 97.
- 4:5:4':5'-Tetramethoxy-2:2'-diethyl-7:7'-*endo*dimethenylthiocarbocyanine *p*-toluenesulphonate, (P.), B., 842.
- 4:5:4':5'-Tetramethoxy-2:2'-diethyl-7:7'-*o*-phenylenethiocarbocyanine bromide, (P.), B., 842.
- 4:5:4':5'-Tetramethoxy-1:1'-dimethyl-7:7'-*endo*dimethenylthiocarbocyanine *p*-toluenesulphonate, (P.), B., 842.
- 4:5:4':5'-Tetramethoxy-1:1'-dimethyl-7:7'-*o*-phenylenethiocarbocyanine bromide, (P.), B., 842.
- 2:3:2':3'-Tetramethoxydiphenyl-5:5'-dicarboxylic acid, dimethyl ester, A., 1237.
- Tetramethoxyethoxyacetophenone, 2-hydroxy-, A., 91.
- 5:6:13:14-Tetramethoxy-1:2:9:10:11:18-hexahydrochrysene-*a*, A., 1492.
- 2:3:11:12-Tetramethoxy-16-methyl-8:9:16:17-tetrahydroberberinium iodide, A., 99.
- 2:3:11:12-Tetramethoxyoxyprotoberberine, A., 767.
- 2:3:11:12-Tetramethoxyprotoberberinium iodide, A., 767.
- 1:3:6:7-Tetramethylalloxazine, A., 94.
- 5:6:7:8-Tetramethylalloxazine, A., 1510.
- Tetramethyldiaminoanthraquinones, A., 87.
- 2:7-Tetramethyldiaminoanthracene, and its acetyl derivative, A., 87.
- Tetramethyldiaminobenzophenone *per*-chlorate and *dip*chlorate, A., 1124.
- $\alpha\gamma$ -Tetramethyldiaminobutane, and its dimethiodide, A., 478.
- 2:7-Tetramethyldiamino-9:10-dihydroanthracene, A., 87.
- 2:7-Tetramethyldiamino-10-hydroxy-10-phenylanthrone, and its salts, A., 87.
- 2:7-Tetramethyldiamino-9(10)-hydroxy-9(10)-phenyldihydroanthracene, A., 87.
- pp'*-Tetramethyldiaminophenylstyrylmethane, and its salts, A., 209.
- Tetramethyldiaminoisopropyl chloride, and its picrate, A., 874.
- Tetramethyldiaminoisopropylhydrocupreine, and its sulphate, A., 874.
- Tetramethylammonium *camphorsulphonate*, A., 496.
chloride, solubility of, in ethylene dichloride, A., 166.
flavinate, A., 639.
silicofluoride, crystal structure of, A., 17.
- Tetramethylanthraquinones, A., 1372.
- Tetramethylazoxybenzenes, 3:3'-dinitro-, A., 482.
- 3:3':3'-Tetramethylbis-1:1'-*spiro*hydrindenes, 5:6:5':6'-*tetra*hydroxy-, and their derivatives, A., 80.
- $\alpha\alpha\gamma\gamma$ -Tetramethylbutylguaiacol, production of, (P.), B., 841.
- $\alpha\alpha\gamma\gamma$ -Tetramethylbutylpyrogallol, production of, (P.), B., 841.
- $\alpha\alpha\gamma\gamma$ -Tetramethylbutylquinol, production of, (P.), B., 841.
- $\alpha\alpha\gamma\gamma$ -Tetramethylbutylresorcinol, production of, (P.), B., 841.
- 3:3':5:5'-Tetramethyl-4:4'-dibutylpyromethene, and its hydrobromide, A., 363.
- 2:3:5:8-Tetramethyl-6:7-di-(β -carboxyethyl)-1:4-dipropylporphyrin, and its derivatives, A., 363.
- 1:3:5:8-Tetramethyl-2:4-diethyl-7- β -carboxyethylporphyrin, derivatives of, A., 363.
- 1:3:5:8-Tetramethyl-2:4-diethyl-7- α -hydroxyethylporphyrin, A., 363.
- 3:3':5:5'-Tetramethyl-4:4'-diethyl-*ms*-methylpyrromethene hydrochloride, A., 632.
- 1:3:5:8-Tetramethyl-2:4-diethylporphyrin, 6:7-*di*bromo-, A., 363.
- 3:3':5:5'-Tetramethyl-4:4'-diethyl-*ms*-propylpyrromethene hydrochloride, A., 632.
- 1:3:5:8-Tetramethyl-2:4-diethyl-7-vinylporphyrin, and its copper salt, A., 363.
- 4:5:9:10-Tetramethyl-9:10-dihydrophenazine, A., 870.
- 1:3:7:9-Tetramethyldihydrouric acid, 4:5-*di*chloro-, and 4-chloro-5-hydroxy-, acetyl derivative, A., 362.
- 1:3:1':3'-Tetramethyl-5:10:10':5'-dimorphanthrid-9:9'-onylene, A., 992.
- 3:7:3':7'-Tetramethyl-2:2'-dinaphthylmethane-1:4:1':4'-*di*quimone, A., 217.
- Tetramethylenesulphonates, A., 987.
- 3:4-Tetramethylene-1:4:4':9'-tetrahydroanthraquinone, 2-chloro-, (P.), B., 622.
- 1:3:5:7-Tetramethyl-8-ethyl-4:5-di-(β -carboxyethyl)-2-vinyldihydrobilin, 1':8'-*dihydroxy*-, A., 994.
- o*-Tetramethylfisetinidin chloride, A., 985.
- Tetramethyl- γ -gluconolactone, rotatory dispersion of, A., 568.
- Tetramethylglucose, partition of, between chloroform and water, A., 695.
- Tetramethylguanylecystamine, and its salts, A., 1266.
- Tetramethylhazeic acid, and its methyl ester and derivatives, A., 757.
- Tetramethylhexahydroanthracene, A., 217.
- 1:1:2:3-Tetramethylcyclohexane, A., 1127.
- 2:2:6:6-Tetramethylcyclohexanone, derivatives of, A., 621.
- $\alpha\alpha\beta\epsilon$ -Tetramethyl-4⁸-hexen- γ -ol, A., 963.
- Tetramethyl- γ -mannonolactone, rotatory dispersion of, A., 66.
- Tetramethylmethane, thermodynamic functions of, A., 437.
- 2:3:4:6-Tetramethyl- α -methylaltroside, A., 1225.
- cis*-1:2:3:5-Tetramethylcyclopentane-1:3-dicarboxylic acid, and its anhydride, A., 983.
- Tetramethylpopulin, A., 69.
- 1:4:5:8-Tetramethylporphyrin-2:3:6:7-tetra-succinic acid, iron salt, and octamethyl ester and its derivatives, A., 994.
- ω -2':3':4'-Tetramethylsalicin, A., 69.
- Tetramethylsuccinilic acid, A., 474.
- Tetramethylsuccin-*p*-tolil, A., 474.
- Tetramethylsuccin-*p*-toluidic acid, A., 474.
- Tetramethyltetraethylporphyrins, and their derivatives, A., 363.
- 1:3:5:7-Tetramethyl-2:4:6:8-tetra-(β -dicarbomethoxyethyl)porphyrin, and its derivatives, A., 363.
- 1:4:5:8-Tetramethyl-2:3:6:7-tetra-(α -dicarboxyethyl)porphyrin, and its derivatives, A., 363.
- Tetramethyltetrahydroanthraquinones, A., 217.
- Tetramethyltetrahydrophenanthraquinone, A., 217.
- 2:4:7:9-Tetramethyl-3:5:6:8-tetrapropyltetrapyrro-11:14:18-triene, 1:10-*di*hydroxy-, *tri*hydrobromide, A., 362.
- 3:4:3':4'-Tetramethylthiazolecyanine iodide, (P.), B., 842.
- Tetrandrine, salts of, A., 873.
- Tetranichus telarius*, control of, on hops, B., 1012.
- Tetraphenylarsonium bromides, chlorides, and iodides, A., 767.
- Tetraphenylbenzenes, A., 204.
- Tetraphenyl-*p*-benzoquinone, A., 86.
- 3:3:4:4-Tetraphenylcyclobutane-1:2-dione, magnetochemistry of, A., 1370.

- Tetraphenyldihydrophthalic anhydride, A., 213.
- αααα*-Tetraphenyl- $\gamma\gamma$ -dimethylpentane, A., 203.
- αααα*-Tetraphenyl- $\gamma\gamma$ -dimethylpentane-*αα*-diol, A., 203.
- Tetraphenyldimethylpentanemethylene oxide, A., 203.
- Tetraphenylduoranthene, manufacture of, (P.), B., 1133.
- Tetraphenylduorenone, A., 213.
- αααα*-Tetraphenylheptane, A., 740.
- Tetraphenylcyclopentadienone, and its solutions in benzene and in sulphuric acid, colour of, A., 216.
- αααα*-Tetraphenylpentane, and its compounds with alkali metals, A., 203.
- αααα*-Tetraphenylpentane-*αα*-diol, A., 203.
- αααα*-Tetraphenyl- Δ^4 -pentinene, δ -bromo- γ -hydroxy-, A., 493.
- αααα*-Tetraphenyl- Δ^4 -pentinene $\gamma\delta$ -oxide, A., 493.
- Tetraphenylphthalic acid, and its derivatives, A., 213.
- Tetraphenylphthalic anhydride, manufacture of, (P.), B., 1133.
- 1:1:2:2-Tetraphenylcyclopropane, A., 203.
- αααα*-Tetraphenylpropane, *αα*-dipotassium derivative, A., 203.
- αααα*-Tetraphenylpropane-*αα*-diol, A., 203.
- 2:4:4:6-Tetraphenyl- γ -pyran, and 3:5-dibromo-, A., 354.
- 1:2:4:6-Tetraphenylpyridinium perchlorate, A., 1505.
- Tetraphenylrubene. See Rubrene.
- Tetraphenylsilicane, tetra-*m*-amino-, and its salts and derivatives, A., 1258.
- Tetraphenylsilicanes, *tetranitro*-, reduction of, A., 1258.
- 5:6:7:8-Tetraphenyl-1:2:3:4-tetrahydronaphthalene, A., 968.
- Tetraphenyl-*o*-toluic acid, and its ethyl ester, A., 213.
- Tetrapolymethylenoanthracenes, derivatives of, A., 1243.
- αα*-Tetra-*n*-propyldiamino-*n*-decane, (P.), B., 974.
- Tetra-*m*-isopropylaminotetraphenylsilicane, and its tetrahydrochloride, A., 1258.
- 2:2:6:6-Tetra-*n*-propylcyclohexanol derivatives, A., 621.
- 2:2:6:6-Tetra-*n*-propylmethylcarbinol, A., 621.
- 2:2:6:6-Tetra-*n*-propyl-1-methylenecyclohexane, A., 621.
- Tetrathiocyanatodiamidochromiato-acid, and its salts, A., 1140.
- Tetrathio-orthogermanic acid. See under Germanium.
- Tetrathio-osililic acid. See under Silicon.
- Tetratriacontadiene, synthesis of, and its properties, A., 728.
- Tetrazole, 4-amino-, condensation of, with carbonyl compounds, A., 1509.
- Tetrazoles, pharmacology of, A., 525.
- Tetronic acid, hydroxy-, and its derivatives, A., 1106.
- Textiles, production of, (P.), B., 300, 1138.
- heating of liquors in, (P.), B., 1042.
- assistants for, (P.), B., 57, 92.
- use of aluminium salts in, B., 19.
- use of chlorinated rubber in, B., 34.
- use of sodium metaphosphate in, B., 800.
- use of stainless steel in, B., 625.
- addition of wool fat, etc., to, after production, (P.), B., 59.
- treatment of, (P.), B., 19, 799, 946.
- with liquids, (P.), B., 1042.
- Textiles, cleansing, wetting, and dispersing agents, etc., for, (P.), B., 145.
- delustring of, (P.), B., 450.
- dry-cleaning of, (P.), B., 898.
- dressings for, (P.), B., 898.
- antistatic dressing for, (P.), B., 943.
- colours and, B., 721.
- dyeing of. See under Dyeing.
- foams for use in dyeing, degumming, etc., of, (P.), B., 19.
- assistants for dyeing and finishing of, B., 301.
- finishes for, B., 1041.
- uses of latex in finishing of, B., 897.
- coating and impregnation of, with rubber latex, B., 945.
- products for glazing of, (P.), B., 800.
- impregnation of, with rubber dispersions, (P.), B., 801.
- printing pastes for, (P.), B., 1042.
- dinitro-compounds as printing resists for, (P.), B., 353.
- lime soap in scouring of, B., 1041.
- sizing of, (P.), B., 1091.
- washing of, (P.), B., 303, 846.
- wetting, soaping, etc., agents for, (P.), B., 589, 627.
- uses of "calgon" in wet-processing of, B., 846.
- manufacture of agents for improvement of, (P.), B., 1131.
- crease-proofing of, (P.), B., 542.
- increasing resistance of, to creasing, (P.), B., 847, 848.
- renovating surface and colour of, (P.), B., 98.
- mothproofing of, B., 670.
- protection of, against moths, (P.), B., 444.
- fatty acid condensation products and fatty alcohol sulphonates as detergents for, B., 1090.
- use of sulphonated oils in processing of, B., 897.
- production of white oils for, B., 989.
- uses of urea and thiocarbamide in processing of, B., 846.
- production of figured effects on, (P.), B., 898.
- photochemical investigations on, B., 669, 830.
- reduction of static electrical effects with, (P.), B., 765.
- moisture and liability to mildew on, B., 540.
- preservation of fishing twine, nets, etc., of, (P.), B., 304.
- animal hair, waterproofing of, (P.), B., 848.
- artificial, manufacture of, (P.), B., 624, 944.
- cellulose acetate, delustred, striations in warp of, B., 449.
- cellulose ester and ether, reduction of electrostatic effects on processing of, (P.), B., 304.
- dyed, treatment of, (P.), B., 396.
- stripping of dyes from, (P.), B., 224.
- fireproofed, B., 492.
- mixed-fibre, moisture absorption of, B., 1135.
- rubber-thread, manufacture of, (P.), B., 1155.
- waterproof, manufacture of, (P.), B., 990.
- fluorescence analysis of, B., 797.
- determination in, of cellulose acetate rayon, silk, regenerated cellulose rayon, cotton, and wool, B., 1038.
- Textile assistants, (P.), B., 715.
- manufacture of, (P.), B., 139, 263, 442, 619, 665, 894, 984, 985, 1131.
- stability and colloid-protective action of, B., 1090.
- determination in, of sulphonic acids, B., 617.
- Textile fibres. See under Fibres.
- Textile materials. See Textiles.
- Thalamus, yellow pigment of, A., 233.
- Thalleioquinone reaction, A., 500.
- Thallium, isotope shift of, A., 138.
- energy levels in spectrum of, A., 1292.
- doublets in arc and fluorescence spectra of, A., 1292.
- glow discharge spectrum of, A., 1292.
- L* X-ray spectrum of, A., 676.
- electrical resistance of, at low temperatures, A., 815.
- vapour-pressure curve of, A., 438.
- vapour pressure and chemical constant of, A., 815.
- vapour, refractive index of, A., 431.
- anomalous dispersion in spectrum of, A., 1184.
- absorption by metastable atoms of, A., 424.
- crystals, diamagnetism of, A., 1197.
- Thallium alloys with bismuth, with bismuth and cadmium and with bismuth and lead, A., 576.
- with lanthanum, crystal structure of, A., 433.
- with lead or bismuth, penetration of magnetic fields into, A., 287.
- with mercury, A., 440.
- surface tension of, A., 811.
- with platinum, structure of, A., 1455.
- Thallium salts, oxidation-reduction potential with, A., 1326.
- Thallium halides, plastic properties of crystals of, A., 814.
- effect of iodine on solubility of, A., 446.
- Thalline salts, determination of, potentiometrically and volumetrically, A., 463.
- Thallic chloride, reaction of, with diazo-compounds, A., 1139.
- Thallous salts, Raman effect and complexity of, A., 11.
- Thallous chloride, reaction of, with amino-acids, A., 1460.
- fluoride, absorption spectrum of, A., 144.
- hydroxide, conductivity of, in aqueous solution, A., 1078.
- iodide, transition of, A., 437.
- sulphate, recovery of, from mixtures with cadmium sulphate, (P.), B., 148.
- Thallium organic compounds, A., 638, 1139.
- Thallium triethyl, properties of, A., 574.
- Thallium detection and determination:—
- detection of, with alkalooids, A., 950.
- in poisoned partridges, B., 1160.
- determination of, electrometrically, A., 1338.
- spectrographically, A., 719.
- volumetrically, A., 56.
- in presence of other metals, A., 950.
- in organic compounds, A., 1139.
- Thamnia vernicularis*, components of, A., 1366, 1367.
- Thapsin, isolation of, from *Digitalis thapsi*, and its constitution, A., 91.
- identity of, with calycopterin, A., 1040.
- d*-Thebanan, A., 1138.
- Theelin, from various sources, identity of, and its colorimetric determination, A., 791.
- administration of, to male and female rats, A., 1173.

- Theelin**, effect of, on mammary glands of monkeys, A., 1426.
on oestrus in ovariectomy, A., 1426.
- Theolol**, administration of, to male and female rats, A., 1173.
determination of, colorimetrically, A., 791.
- Theobromine**, theobromuric acid degradation of, A., 95.
calcium salt, complex salt of, with calcium nitrite, and its use in the synthesis of drugs, A., 226.
elimination of, from the circulation, A., 245.
- Theobromuric acid**, constitution of, A., 95.
- Theophylline**, compound of diethanolamine and, (P.), B., 46.
determination of, B., 205.
- Therapeutic action**, effect of alkyl- and alkylene-thiol groups on, A., 485.
- Therapeutic agents**, B., 748; (P.), B., 333.
manufacture of, (P.), B., 430, 878*.
- Therapeutic preparations**, manufacture of, (P.), B., 749.
manufacture of solutions of, (P.), B., 206.
calcium compounds for, (P.), B., 1069.
disazo-compounds for use as, (P.), B., 895.
silicic acid gels for, (P.), B., 355.
colloidal manganese solutions for, (P.), B., 381.
use of radioactive emanation in treatment of, (P.), B., 124.
action of, on bacterial agglutination, A., 900.
penetration of, from mother to embryo, A., 1021.
distribution of, in the nervous system, and their determination in tissues, A., 1018.
from *Lactobacillus acidophilus*, (P.), B., 654.
containing silver, manufacture of, (P.), B., 524.
- Thermal conductivity** according to the geometric weight method, A., 1065.
effect of cold-working on, A., 692.
effect of electric field on, A., 691, 692.
of enamels, B., 901.
of gases, measurement of, A., 320; (P.), B., 883.
of polyatomic gases, A., 691, 923.
of insulating materials, B., 1073.
of liquids, A., 1455.
of oils, measurement of, B., 1003.
of solids, effect of electric field on, A., 923.
data, A., 304, 1324.
expansion, measurement of, autographic apparatus for, A., 187.
temperature coefficients of surface tension and, A., 1070.
of metals at high temperatures, A., 21.
of solids, A., 918.
measurement of, B., 177.
- Thermionic devices**, alloys for getters for, (P.), B., 810.
emission, theory of shot effect in, A., 139.
and catalytic activity, A., 273.
- Thermochemistry**, development of, A., 1323.
- Thermocouples**, (P.), B., 274.
measurement of temperature with, B., 1025.
porcelain sheaths for, B., 209.
testing of, A., 721.
chromel-alumel, tables for, A., 721.
copper-constantan, temperature scale derived from, A., 1339.
high-velocity, for gases, B., 257.
- Thermodynamic equations**, families of, A., 301.
synthesis, application of, to transverse effects, A., 575.
- Thermodynamics**, foundation of, A., 691.
derivation of formulae of, A., 691.
problem of, A., 301, 446, 1204.
expression of second law of, in Clifford's numbers, A., 1454.
validity of third law of, A., 301.
Nernst's theorem as third law of, A., 1323.
stable equilibrium in, and intensity parameter, A., 1076.
for simple systems, A., 934.
of gases, A., 815.
- Thermo-electric effect** and superconductivity, A., 1062.
longitudinal, A., 1312.
power and resistance, A., 689.
- Thermo-elements**, light absorption measurements with, A., 561.
- Thermo-luminescence**, measurement of, A., 602.
- Thermomagnetism**, influence of magnetisation and of crystallisation on, A., 1063.
- Thermometers**, thermal expansion of Jena glass for, A., 21.
determination of temperatures of flowing liquids with, (P.), B., 1074.
high-temperature, mercury, filling of, A., 465.
silica refraction, calibration of, A., 1310.
- Thermometry**, advances in, A., 319.
Thermopiles, sensitivity of radiometers, bolometers, and, A., 57.
- Thermoplastic compositions**, manufacture of, (P.), B., 737.
containing rubber, production of, (P.), B., 961.
materials, manufacture of, (P.), B., 162.
moulding of, (P.), B., 240.
- Thermopsine**, and its derivatives, A., 872.
- Thermoregulators**, A., 721.
filling of bulbs of, A., 321.
without relay, A., 598.
photo-electric, A., 598, 721.
toluene, A., 598, 721.
toluene-mercury, A., 1339.
- Thermostats**, A., 187; (P.), B., 434.
relays for, A., 319.
control of, with valve relays, A., 187.
for control of gas flow, (P.), B., 482.
small capacity, A., 319.
with thermionic control, A., 465.
water, A., 1474.
- Theritia neriifolia*, glucoside from, A., 735, 1110.
- Thevetigenin**, and its acetyl derivative, A., 735.
- Thevetin**, A., 735, 1110.
- Thianthren disulphoxides**, structure of, A., 809.
- Thianthren**, 2-hydroxy-, (P.), B., 621.
- Thiacyclopentane 1:1-dioxides**. See Tetramethylenesulphones.
- Thiazine**, trichloro-, A., 634.
- Thiazole compounds**, production of, (P.), B., 1134.
derivatives, from ω -chloroacetylpyrocatechol, A., 1511.
medicinal, production of, (P.), B., 749.
- Thiazoles**, A., 1386.
- Δ^2 -Thiazolines**, synthesis of, A., 995.
- Thickeners**, (P.), B., 387.
for liquids, B., 289.
- γ -1-Thienyl-*n*-butyric acid**, A., 1377.
- 2-Thienylidene-2-acetofurone**, A., 1377.
- 2-Thienylideneacetophenone**, A., 1377.
- Thioacetanilide**, effect of, on photographic developers, B., 879.
- Thioacetic acid**, benzthiazyl ester, manufacture of, B., 467.
- Thioacetnaphthalide**, effect of, on photographic developers, B., 879.
- β -Thioacet- α -phenyl- α -benzylhydrazide**, A., 1360.
- β -Thioacet- α -phenyl- α -methylhydrazide**, A., 1360.
- β -Thioacetyl- α -phenyl- α -benzyl-*S*-methylhydrazine**, A., 1119.
- β -Thioacetyl- α -phenyl- α -*S*-dimethylhydrazine**, A., 1119.
- β -Thioacetyl- α -phenyl- α -methylhydrazine**, A., 1119.
- Thioacids**, esters of, A., 1390.
- Thio-alcohols**, far-ultra-violet absorption spectra of, A., 805.
- Thiobarbiturates**, sedative action of, A., 1155.
- β -Thiobenz- α -acet- α -phenylhydrazide**, A., 1360.
- Thiocamphor**, synthesis of, A., 219.
- Thiocarbamide**, structure of, A., 1306.
preparation of, A., 851.
production of, (P.), B., 840.
manufacture and separation of, from ammonium thiocyanate, (P.), B., 92.
and its substituted derivatives, dissociation of, in aqueous solution, A., 1111.
compounds of, with cuprous chloride, A., 167.
with iridium or rhodium, A., 461.
effect of, on fastness of dyes on cellulose derivatives, B., 492.
uses of, in textile processes, B., 846.
manufacture of resins from mineral hydrocarbons and, (P.), B., 112.
prevention of browning of plant tissues and juices by, B., 647.
- Thiocarbamides**, manufacture of, (P.), B., 140.
condensation of, with chloroacetic acid, A., 364.
complex metal salts of, A., 167.
colour reactions of, with ruthenium and osmium compounds, A., 332.
- 5-Thiocarhamidomethylglyoxaline**, 2:4-dibromo-, and its derivatives, A., 503.
- Thiocarbanilides**, effect of substituents on formation of, A., 1360.
pp-disubstituted, directive effect of cyano- and iodo-substituents on thiazole cyclisation of, by bromine, A., 364.
- Thiocarbimides**, ultra-violet absorption spectra of, A., 428.
reaction of, with potassium hydrogen sulphite, A., 332.
- Thiocarbimidesulphonic acids**, manufacture of, (P.), B., 263.
- Thiocarbonyl tetrachloride**, constitution and reactions of, A., 854.
- Thiocarbonylsalicylamide**, and its derivatives, A., 1510.
- Thiochrome**, and its hydrochloride, A., 1026.
- Thiochromenediol**, tautomerism of thio-coumarindiol and, A., 1248.
- Thio-coumarindiol**, tautomerism of thio-chromenediol and, A., 1248.
- Thiocyanates**, Raman spectra of, A., 11, 145.
ultra-violet absorption spectra of, A., 428.
phase rule studies on, A., 168.
as weed-killers, B., 567.
complex, crystal structure of, A., 1060.
composition and hydration of ions in, A., 824.
solubilities of, A., 26.
normal aliphatic, preparation of, A., 479.

- Thiocyanates**, organic, fungicidal action of, B., 1110.
 as insecticides, B., 38, 647.
 detection of, in presence of bromides, chlorides, and iodides, A., 462.
 determination of, in biological fluids, A., 422.
 in presence of chlorides and sulphides, A., 1215, 1336.
 in presence of cyanides, A., 183.
 cresolphthalein as indicator for argentometric determination of, A., 53.
isoThiocyanates. See **Thiocarbimides**.
Thiocyanic acid, metallic salts, composition and hydration of complex ions of, A., 824.
 ammonium salt, manufacture of, (P.), B., 672.
 solubility of, in water, and methyl and ethyl alcohols, A., 25.
 preparation of guanidino nitrate from, A., 1111.
 nitrogen transformations of, in soils, B., 516.
 barium and ammonium salts, equilibria of, A., 168.
 barium and silver salts, equilibria of, A., 168.
 complex calcium and cobalt salts of, A., 26.
 cobalt zinc mercury and zinc mercury salts, solubility of, A., 1068.
 iron salts, complex, with pyridine, A., 946.
 lanthanum salt, solubility of cobalt-ammines in aqueous solutions of, A., 26.
 mercury salt, as reagent for cobalt, A., 721.
 double mercury salts, influence of salts on solubility of, A., 441.
 potassium salt, reaction of, with iodine, A., 828.
 quinidino salt, A., 1259.
 sodium salt, solubility of, in ethyl alcohol, A., 25.
 stannous and stannic salts, A., 50.
 tetrapyridine ferrous salt, A., 1131.
n-amyl ester, A., 479.
 amyl, decyl, dodecyl, *cyclohexyl*, nonyl, octyl, tridecyl, and undecyl esters, A., 479.
 (—) β -butyl and (—) β -octyl esters, A., 1230.
 dodecyl ester, manufacture of, (P.), B., 348.
 ethyl ester, ultra-violet absorption spectra of mixtures of hexano and, A., 428.
p-Thiocyano-carbamides, synthesis of, A., 1488.
Thiocystis, carbonic acid assimilation by, A., 1167.
 isolation of lycopene from, A., 340.
Thiodiazole, 1:4-dithiol, as analytical reagent, A., 1094.
 α -Thio-3:4-dimethoxyphenylacetic acid, A., 976.
Thiodiphenylamine, 3-chloro-, A., 1511.
Thio-ethers, far ultra-violet absorption spectra of, A., 805.
Thioethylglucoside, benzoyl derivative, A., 1354.
1-Thioglycol-2-amino-5-alkoxythioglycollic acids, manufacture of, (P.), B., 183.
Thioglycollic acid, reaction of, with halogenoacetic acids, A., 453.
 with lignin ethyl ether, A., 1502.
 as reagent for lignin, A., 1259.
Thioglycol- β -naphthylamide. See "Thionalide."
- Thiocyclohexanone**, and its polymeride, synthesis of, A., 219.
Thiohydrazides, constitution of, A., 1360.
 as reagents for aldehydes, A., 1512.
Thiohydrazines, A., 1119.
Thioindigo dyes, manufacture of, (P.), B., 764, 797.
 manufacture of intermediates for, (P.), B., 349.
Thioketones, preparation and properties of, A., 1241.
 aliphatic, A., 1107.
 aromatic, reaction of, with organic azides, A., 742.
 "Thiokol," B., 1006.
Thiol compounds, action of iodoethyl alcohol on, A., 737.
 determination of, A., 1111.
 colorimetrically, A., 877.
 β -Thiolactic acid, heat of combustion of, A., 304.
 α -Thiolamines, synthesis of benzthiazoles from aldehydes and, A., 1386.
N-Thiolanilides, molecular rearrangement of, A., 1359.
Thiolsulphonic acids, esters, exchange of sulphonyl groups in, A., 1114.
 "Thionalide," detection of metals with, A., 950.
 determination and separation of metals with, A., 1338.
2-Thion-3-allyl-1:2:3:4-tetrahydroquinazoline, 4-hydroxy-, and its perchlorate, A., 630.
Thionaphthen, 6-amino-3-hydroxy-, and 3:4:6-trihydroxy-, triacetyl derivative, A., 1378.
 4-nitro-, A., 1377.
Thionaphthenopyrazoles, A., 763.
3:6-Thionaphthenquinone, and its semicarbazone, A., 1378.
Thionaphthenquinones, A., 1377.
3:4-Thionaphthenquinone-6-sulphonic acid, and its potassium salt, A., 1377.
Thionaphthen-6-sulphonic acid, 3-amino-4-hydroxy-, A., 1377.
 α -Thionaphthoic acid, esters, A., 342.
Thio- β -naphthol diazo-thioethers, preparation of, A., 1490.
4-Thionaphthoxyacetic acid, A., 1378.
Thioneine, determination of, in blood, A., 642.
2-Thion-3-phenyl-1-methyl-2:3-dihydroindole, and its picrate, A., 1379.
2-Thion-1:2:3:4-tetrahydroquinazoline, 4-hydroxy-, complex silver and mercury salt with, A., 1253.
 derivatives of, and their colour, A., 630.
Thionyl chloride, reaction of, with *m*- and *p*-aminobenzoic acids, A., 1235.
 on anilides, carbamides, and urethanes, A., 854, 1359.
 with phenol, A., 855.
 and its thermal decomposition products, reactions of, with formates and oxalates, A., 460.
 use of, in preparation of acid chlorides, A., 341.
Thionylaminobenzoyl chlorides, A., 1235.
Thioisoximes, preparation of cyclic imines from, A., 868.
Thiophen, catalytic decomposition of, in presence of hydrogen, B., 12.
 derivatives, A., 1248.
 removal of, from benzene, B., 885.
Thiophen, 2-bromo-5-nitro-, A., 1504.
Thiophen series, A., 354, 1378.
 chemical morphology in, A., 1377.
Thiopheno-2':3'-thiophens, and their derivatives, A., 1249.
- Thiophosphoric acid**, esters, production of, (P.), B., 1132.
 diphenyl methyl ester, production of, (P.), B., 1133.
Thiophthen, amino-, and its acetyl derivative, and hydroxy-, A., 1249.
Thiophthens, isomeric, and their derivatives, A., 1249.
Thiophthienyl methyl ketone, and its derivatives, A., 1249.
Thiopyran series, syntheses in, A., 1377.
Thiopyrimidazine derivatives, A., 762.
Thiopyrones, dipole moments and structure of, and their derivatives, A., 809.
Thiosaccharin, action of anilines on, A., 634.
Thiosaccharinic acid, phenyl- and tolyl-ammonium salts, A., 634.
Thiosemicarbazide, silver derivatives, A., 737.
Thiosemicarbazones, silver derivatives, A., 737.
 β -Thiotolu- α -tolylhydrazides, A., 1360.
 β -Thiotoluoyl- α -tolyl-*S*-methylhydrazines, A., 1119.
 β -*p*-Thiotoluoyl- α -*p*-tolyl-*S*-methylhydrazine, and its benzoyl derivative, A., 1119.
 β -Thio-*m*-tolylacet- α -phenyl- β -methylhydrazide, A., 1360.
Thiovaluric acid, A., 762.
Thioxanthone dyes, manufacture of, (P.), B., 141.
 Thistles, comparison of tillage and chlorates for control of, B., 167.
 sow and Canada, control of, B., 118.
Thixotropy, A., 1075.
 influence of orientation of anisometric particles on, A., 933.
 sedimentation, of stabilised suspensions, A., 1320.
Tholeiites, late palaeozoic, of Scotland, A., 1345.
Thomson effect, and entropy, A., 20.
Thoreaulite, analysis and optical properties of, A., 841.
Thorite, specific heat of, A., 690.
Thorium, at. wt. and isotopes of, A., 802.
 occurrence of, in pitchblendes of Great Bear Lake, Canada, A., 469.
 emission of positrons by active deposits containing, A., 1294.
 irradiation of, by neutrons, A., 911, 1050.
 temperature scale of, A., 1312.
 disintegration of films of, on a tungsten cathode, A., 677.
Thorium bases:—
 Thoriumbromoammines, A., 934.
Thorium tetrabromide, action of, with potassium and with potassium amide in liquid ammonia, A., 1089.
 chloride, preparation of standard solutions of, A., 50.
 hydroxide sols, A., 820.
 hydrosols, effect of potassium salts on pH of, A., 1459.
 nitrate, ionic arrangement in solutions of, A., 931.
 dioxide, thermionic emission from surfaces coated with, A., 273.
 cast crucibles of, B., 406.
Thorium determination:—
 determination of, by emanation method, Schott glass filters for, A., 56.
 with 8-hydroxyquinoline, A., 464.
 with picrolonic acid, A., 464.
Thorium-*B*, half-period of, A., 6.
 adsorption of, by active carbon, A., 1069.
 as radioactive indicator, A., 577.

- Thorium-*C''***, decay curves of, A., 6.
use of, as indicator, A., 425.
- Thorium-*C* and -*C''***, continuous β -ray spectra of, A., 275.
- Thorium-*C*+*C''***, upper limit of β -ray spectrum of, A., 425.
- Thorium-*X*** occurrence of, in Ukhta oil-field water, A., 190.
- Thorn apples.** See *Datura stramonium*.
- Thoron**, radioactive materials from, in air of Santa Fe, A., 1101.
determination of, in small quantities, apparatus for, A., 723.
- Threads**, manufacture of, from animal fibres, (P.), B., 300.
treatment of, (P.), B., 799.
with liquids, apparatus for, (P.), B., 626.
reduction of static electrical effects with, (P.), B., 765.
- artificial**, manufacture of, (P.), B., 300, 401, 668, 720.
by dry-spinning, (P.), B., 96.
self-supporting winding in, (P.), B., 1041.
- manufacture and stretching of**, (P.), B., 300.
treatment of, (P.), B., 1040.
washing, etc., of, (P.), B., 1138.
filter for spinning of, (P.), B., 800.
coloured, manufacture of, (P.), B., 626.
tubular, production of, (P.), B., 144.
resembling wool, manufacture of, (P.), B., 18.
- elastic**, production of, from rubber latex, (P.), B., 279.
radioactive, production of, (P.), B., 766.
spun, manufacture of, (P.), B., 18.
textile, treatment of, with rubber latex, (P.), B., 1140.
determination of degree of lubrication of, (P.), B., 18.
- viscose rayon**, treatment of, (P.), B., 1041.
- Three-centre problem**, A., 1298.
- Thrombase**, coagulation of fibrinogen by, A., 165.
- Thrombin**, formation of, A., 771.
preparation of, A., 1024.
as a calcium compound, A., 231.
determination of, A., 104.
- Thrombosis**, coronary, prognosis of, A., 1403.
- Thujone *m*-nitrobenzhydrazide and 2:4-dinitrophenylhydrazone**, A., 743.
- β -Thujonetetrazole**, production of, (P.), B., 830.
- Thulium**, nuclear moment of, A., 137.
- Thymidine**, ring structure of, A., 610, 863.
boric acid reaction with, A., 1266.
- Thymol**, manufacture of, (P.), B., 621.
dipole moment of, A., 684.
heterogeneous equilibria in systems containing, A., 1322.
derivatives, action of, on blood-pressure, A., 394.
- 2-mercurichloride**, A., 1139.
- 3:5-dinitrophenylurethane**, A., 207.
determination of Jolles' complex of indoxyl and, A., 769.
colour reaction of, with ammonia and hypobromite, A., 1337.
- Thymol**, chloro-, mercury ethyl salt, A., 202.
- Thymolglycuronic acid**, synthesis of, on acid and alkaline diets, A., 1530.
- Thymolsulphonephthalein**, mercury ethyl salt, A., 202.
- Thymonucleic acid**, A., 646.
detection of, in blood-platelets, A., 230.
- Thymoxyethylallylamine**, effect of, on excretion of sodium chloride and water in urine, A., 894.
- Thymoxyethylidimethylamine**, effect of, on excretion of sodium chloride and water in urine, A., 894.
- Thymus**, reduction of, by gonadotropic hormones, A., 412.
effect of injection of cyclopentylidinitrophenol on, A., 781.
desiccated, effect of feeding, on growth, A., 1404.
rabbit's, reduced glutathione in, A., 511.
- Thymus extracts**, biological effects of, A., 1170.
effect of, on antibodies in animal tissues, A., 644.
- Thymyl-*N*-*p*-chlorophenylurethane**, A., 998.
- Thyroglobulin**, mol. wt. of, A., 105.
mol. wt. and isoelectric point of, A., 1522.
amino-acids of, A., 1543.
human, normal and goitrous, iodine and thyroxine in, A., 1285.
- Thyroid**, separation of, into colloid, cells, and nuclei, A., 1003.
activity of, and iodine metabolism, A., 1423.
inhibition of, by animal blood, A., 1171.
reversal of, by iodine, A., 410.
effect of activation of, on its iodine economy, A., 540.
hormonic symptomatology of, A., 1423.
biochemistry of function of, A., 1171.
diagnosis of function of, A., 775.
effect of tyrosine on function of, A., 1269.
relation of, to adrenals, A., 410.
to liver, A., 1285.
- rôle of**, in antithyrotropic-protective action of blood, A., 1543.
- effect of feeding with**, on anterior pituitary of female albino rats, A., 412.
- influence of**, on respiration of tissue sections, A., 410.
- effect of**, on chlorides in blood-serum, A., 540.
on carbohydrate metabolism, A., 888.
on creatine in albino rats, A., 900.
on formation of hen's eggs, A., 1285.
- effect of ablation of**, on congestive heart failure and angina pectoris, A., 516.
- effect of removal of**, in heart diseases, A., 236.
- effect of repeated injections of insulin on**, A., 901.
- effect of temperature on iodine content of**, A., 511.
- efficiency of various preparations of**, A., 540.
- iodine tolerance test for insufficiency of**, A., 519.
- bile in diseases of**, A., 384.
- blood-cholesterol and metabolism in disease of**, A., 395.
- acetonitrile test for**, A., 780.
- of albino rats**, effects of iodine and vitamin-A deficiency on, A., 1285.
- atrophied**, effect of amniotin on, A., 791.
- enlarged**, in calves, relation of, to iodine content, A., 1150.
- ground-squirrel's**, seasonal changes in, A., 1032.
- of female guinea-pigs**, proliferative activity of, A., 1423.
- human**, chemistry of, A., 511.
- lion's**, total and thyroxine-iodine in, A., 105.
- Thyroid**, rat's, effect of anterior pituitary and potassium iodide on, A., 1423.
U.S.P. assay of, B., 1164.
determination in, of iodine, A., 104.
- Thyroid extracts**, action of, on respiration of tissues, A., 539.
on excretion of iodine in urine, A., 258.
- Thyroid hyperplasia**, iodine in relation to, A., 1009.
- Thyroidectomy**, phosphorus, sodium, and nitrogen exchange in blood in, A., 108.
excretion of iodine in urine after, A., 410.
- Thyroidin**, action of, on fat and lipin metabolism, A., 127.
- Thyronine, diiodo-**, effect of, on muscular exercise, A., 777.
- Thyroparathyroidectomy**, calcium excretion in, A., 1531.
effect of, on calcium of serum, A., 539.
- Thyroxine**, absorption spectrum of, A., 563.
effect of p_H on, A., 896.
in blood, effect of thyrotropic hormone on, A., 790.
in fetus and the new-born, A., 772.
in infants, A., 1010.
effect of oral and duodenal administration of, A., 258.
site of action of, A., 540.
effect of, on basal metabolism in rabbits, A., 651.
on chronic residual index of blood-plasma, A., 1032.
on bone-phosphatase of rats, A., 540.
on carbohydrates and proteins in liver, A., 127.
on carotene in blood and in adrenals, A., 790.
on cell respiration, effect of nervous system on, A., 1285.
on creatine in albino rats, A., 900.
on fat and lipin metabolism, A., 127.
on fowl embryos, A., 668.
on metabolism of cold-blooded vertebrates, A., 540.
on metabolism of excised frog's heart, A., 540.
on muscular exercise, A., 777.
on nitrogen in tissues, A., 540.
on weight of internal organs in rats, A., 540.
on pancreatic enzymes, A., 540.
on phospholipins in blood, liver, and muscle, A., 1171.
on plasma-phosphatase in dogs, A., 540.
on swelling of prostate, A., 410.
and diuresis on protein metabolism, A., 1171.
on tadpoles, A., 1285.
on tissue metabolism, A., 1171.
antagonism of, to narcotics, A., 1019.
to vitamin-A, A., 792.
ketonic acid analogous to, A., 976.
peptide, absorption of, in gastrointestinal tract, A., 900.
determination of, in thyroid substance, A., 1170.
determination of iodine from, with hydrazine, A., 1171.
- d*- and *l*-Thyroxines**, calorogenic action of, A., 888.
- Tigogenin**, conversion of, into an identical derivative, A., 986.
acetate, and its derivatives, A., 1126.
- Tiles**, manufacture of, (P.), B., 229.
kilns for, (P.), B., 454.
binding material for, (P.), B., 675.

Tiles, pigments for colouring of, (P.), B., 815.
 decoration of, (P.), B., 101.
 impregnation of, (P.), B., 1076.
 moulding of, (P.), B., 853.
 changes in size of, on treatment with water, B., 188.
 thermoplastic fibrous composition for, (P.), B., 1154.
 acoustic, manufacture of, (P.), B., 456.
 floor, do-airing of, B., 1044.
 heat- and sound-insulating, manufacture of, (P.), B., 805.
 white wall, effect of talc in, B., 992.
Tilia, dormancy in seeds of, B., 326.
 Timothy, nitrogen in infusions of, A., 265.
 Tin, nuclear moment of, A., 800.
 effect of bismuth on structure and allotropic of, B., 595.
 polymorphism of, A., 688.
 recovery of, from residues, (P.), B., 908.
 purification of, and its alloys with lead, (P.), B., 680.
 refining of, (P.), B., 155.
 effect of pressure on spectral lines of, A., 1438.
 anode potential of, in electrolysis of sodium stannate solutions, A., 942.
 electrodeposition of, and its alloys, B., 809.
 electroplating with, from acid solutions, B., 502.
 from alkaline baths, B., 679.
 analysis of alkaline solutions for, B., 502.
 electrical resistance of, at low temperatures, A., 815.
 superconductivity of, A., 20.
 magnetic behaviour of superconducting spheres of, A., 1309.
 magnetism of, A., 19, 287.
 magnetic anisotropy of crystals of, and effect of antimony, cadmium, and gallium thereon, A., 1453.
 liquid and solid, specific heats of, near m.p., A., 155.
 surface chemistry of, A., 945.
 diffusion of mercury on, A., 578.
 dissolving of, in aqueous ferric chloride, A., 454.
 crystals, twinning of, A., 1060.
 deformation slip in, A., 435.
 crystal orientation in drawn vessels of, B., 678.
 equilibrium of, with water, tin oxide, and hydrogen, A., 583.
 atmospheric corrosion and tarnishing of, B., 996.
 colouring of, and its alloys, and their protection from corrosion, (P.), B., 156.
 velocity of oxidation of, A., 587.
 effects of aluminium, manganese, or bismuth on, B., 552.
 black spots on, B., 856.
 coating with, of iron, steel, etc., (P.), B., 157.
 of metals for gas meters, B., 593.
 formation and structure of hot-dipped coatings of, B., 996.
 striations in coatings of, on copper, B., 996.
 determination of porosity of coatings of, on steel, B., 457.
 cleaning of surfaces coated with, B., 1049.
 hard, refining of, (P.), B., 1000.
 white, velocity of transformation of, into grey tin, A., 1311.
 electrolytic, crystal structure of, A., 920.

Tin alloys, A., 291.
 electrodeposition of, from alkaline stannate baths, B., 1098.
 binary, equilibria of, A., 1065.
 with aluminium and manganese, A., 439.
 with antimony and zinc, A., 816.
 with beryllium and copper, A., 1066.
 with cadmium, A., 440.
 with cadmium and zinc, electrodeposition of, B., 233.
 with cobalt and iron, A., 1066.
 with copper, X-ray structure of, A., 1198.
 manufacture of, (P.), B., 273.
 electrodeposition of, B., 730.
 electroplating with, (P.), B., 557.
 homogenising of, (P.), B., 556.
 with copper, nickel, and iron, B., 27.
 with iron, preparation of, A., 181.
 with lead, quantitative spectrum analysis of, A., 463.
 determination of lead in, B., 272.
 with lithium, A., 23.
 with mercury, B., 500.
 electrosynthesis and structure of, A., 1330.
 with mercury and cobalt or manganese, A., 23.
 with praseodymium, A., 152.
 with silver, dental, (P.), B., 908.
 determination in, of lead, B., 501.
 Tin bromides, Raman spectra of, A., 1053.
 chlorides, spectra of, A., 913.
 Stannic chloride, Raman spectrum, structure, and hydrolysis of solutions of, A., 34.
 effect of temperature on viscosity of, A., 438.
 slow hydrolysis of aqueous solutions of, A., 702.
 reaction between turpentine and, B., 734.
 double compound of, with acetic acid, A., 1333.
 halides, ultra-violet absorption spectra of, in various solvents, A., 427.
 iodide, photo-dissociation of, A., 682, 807.
 oxide, decomposition of, A., 945.
 Stannous salts, oxidation-reduction potential of, A., 170.
 velocity of reaction of, with ferric salts, A., 1082.
 Stannous chloride vapour, effect of light on, A., 562.
 oxidation of, A., 1333.
 oxide, production of, from the metal, (P.), B., 1092.
 mixed crystal formation with, A., 1455.
 equilibrium of, with sulphur trioxide and water, A., 1323.
 sulphate, oxidation of, by oxygen, A., 1082.
 sulphide, absorption spectrum of, A., 1187, 1299.
 Tin organic compounds, A., 966, 967.
 replacement of tin in, by mercury, A., 506.
 reaction of, with phenylarsine, A., 997.
 Tin alkyl compounds, and their physical properties, A., 333.
 alkyl halides, synthesis of, A., 738, 967.
 tetramethyl, Raman spectrum of, A., 681.
m-tolyl derivatives, A., 769.
 Orthostannic acid, *tetrathio*-, esters, A., 72.

Tin detection, determination, and separation:—
 detection of, A., 462, 718.
 determination of, with cacotheline, A., 319.
 in bearing metals, with ceric sulphate, B., 64.
 in electrolytic copper, spectrographically, A., 1096.
 in ores, electrolytically, B., 955.
 determination in, of lead, spectroscopically, B., 954.
 separation of, from tin, A., 598.
 Tin bronze, B., 996.
 α -Tin bronzes, X-ray structure of, A., 693.
 Tin ores, treatment of, (P.), B., 156.
 flotation of, (P.), B., 505.
 of Llallagua, Bolivia, A., 469, 601.
 Tin plate, manufacture of, (P.), B., 274.
 reactions in, B., 458.
 cleaning of, (P.), B., 907.
 use of sodium sulphite in alkaline detergents for, B., 808.
 optical examination of surface of, B., 954.
 corrosion of, in canning, B., 552.
 coating and decoration of, B., 32.
 improvement of, by electroplating with tin, B., 1050.
 black spots on, B., 856.
 yellow stain on, B., 458.
 Tinctures, preparation of, B., 700.
 production of, B., 877.
 by diacolation, B., 1164.
 alcohol values of, B., 123.
Tineola biselliella. See Moths, clothes.
Tinospora cordifolia, constituents of, A., 796.
 Tischenchenko reaction, and unsaturated aldehydes, A., 846.
 Tissues, relation of growth of, to glycolysis and oxygen tension, A., 891.
 effect of physiological salt solutions on growth of, A., 672.
 effect of ultra-violet light on cells of, A., 124.
 resistance of fixed cells of, to chemicals, A., 1159.
 effect of mercury compounds on cultures of, A., 1413.
 action of metallic chlorides on cultures of, A., 1021.
 binuclear cells in cultures of, A., 1012.
 metabolism of, A., 1148.
 growing in cultures, A., 1414.
 gaseous metabolism of, *in vitro*, A., 387.
 respiration of, A., 1013.
 influence of infection on, A., 1009.
 calcium and potassium in respiration and development of, A., 392.
 effect of lack of water on composition of, A., 892.
 constituents of, A., 1003.
 polarisation in models of, A., 376.
 bromine in, A., 234.
 flavin content of, A., 233.
 oxygen uptake of, A., 119.
 proteins, composition of, A., 1044.
 effect of fasting, refeeding, and cystine in diet on, in white rats, A., 242.
 manufacture of therapeutic preparations of, (P.), B., 829.
 phosphovanillin reaction with, A., 647.
 connective, chemical and electrical properties of, A., 1012.
 subcutaneous, constitution of fat of, A., 1264.
 embryonic, coagulating action of juice of, A., 375.
 hormones and trephones in, A., 668.
 fatty, metabolism of, A., 114.
 fibrous, magnetic properties of, A., 231.

- Tissues**, growing, ascorbic acid and glutathione in, A., 417.
 human, X-ray spectrographic structure of, A., 231.
 depressor extracts of, A., 396.
 copper and inorganic iron in, A., 377.
 irradiated, structure of, A., 422.
 isolated, anaphylactic metabolic reaction of, A., 116.
 normal and malignant, p_H determinations of, A., 270.
 normal and tumour, influence of vitamins on growth of, A., 1174.
 metabolism in, A., 1013.
 effect of oxidation-reduction potential dyes on, A., 1401.
 lactic and pyruvic acid metabolism in, A., 1273.
 plant. See **Plant tissues**.
 regenerating, proteolysis in, A., 778.
 subcutaneous, acid fuchsin and methylene blue as stains for, A., 378.
 determination of oxygen uptake and carbon dioxide evolution from, A., 109.
 detection in, of iron, spectrographically, A., 377.
 determination in, of ascorbic acid and glutathione, A., 793.
 of bromine, A., 104.
 of ethyl alcohol, A., 116.
 of glutathione, A., 511.
 of magnesium, A., 1473.
- Titania gel**. See under **Titanium dioxide**.
- Titanium**, at. wt. and isotopes of, A., 802.
 precipitation of protoactinium with, A., 945.
- Titanium alloys** with aluminium, undercooling of, A., 291.
 with cobalt and iron, A., 926.
 with cobalt, iron, and nickel, for permanent magnets, (P.), B., 810.
- Titanium compounds**, production of, (P.), B., 226.
 for use in tanning and mordanting, (P.), B., 147.
 use of, in vitreous enamels, B., 545.
 precipitation of, (P.), B., 673.
- Titanium salts**, use of, as leather pigments, B., 419.
- Titanium trichloride**, anhydrous, preparation of, A., 833.
 tetrachloride, effect of temperature on viscosity of, A., 438.
 equilibria of, with hydrochloric acid, A., 1461.
 compounds of, with organic nitrogen compounds, A., 180.
 etherates, reactions of, with benzene, A., 616.
 polyhalides, mixed, A., 1470.
 dioxide, manufacture of, (P.), B., 147.
 from apatitosphene ores, B., 403.
 isotope effect in spectrum of, A., 1299.
 gels, sorption of gases by, A., 1315.
 sols, electrochemistry of, A., 700.
 effect of electrolytes on viscosity of, A., 1459.
 development of pigment properties in, B., 109.
 action of chlorine on, mixed with coal, A., 942.
 sulphate, hydrolysis of solutions of, (P.), B., 148, 673, 849.
 sulphates, removal of iron from, A., 460.
 Titanic hydroxide, solution of, in hydrogen peroxide, A., 1073.
 occurrence of, in Stromboli magnetites, A., 468.
 Pertitanates, A., 313.
- Titanium organic compounds**, A., 479.
- Titanium detection, determination, and separation** :—
 detection of, with Group III metals, A., 56.
 by induced precipitation, A., 1474.
 with pyrocatechol, A., 951.
 determination of, colorimetrically, with gallic acid, A., 464.
 gravimetrically, with tannin, A., 319.
 as phosphate, A., 1095.
 volumetrically, standards for, A., 56.
 in cast iron and steel, colorimetrically, B., 952.
 and vanadium, in cast iron, B., 358.
 in cast iron, iron, and steel, B., 410.
 in chromium steel and alloys, electrolytically, B., 807.
 in presence of iron, iodometrically, A., 951.
 in iron alloys, B., 410.
 in steel, iron alloys, slags, etc., potentiometrically, B., 677.
 separation of, from manganese, by means of hydrogen peroxide, A., 1339.
- Titanium alum**, A., 942.
- Titanium ores**, treatment of, by Haglund process, B., 552.
 Virginia, formation of, A., 322.
- Titanium white**, manufacture of, (P.), B., 277.
 "chalking" of, B., 1055.
- Titanocitric acid**, sodium salt, A., 479.
- Titanolactic acid**, alkali salts, A., 479.
- Titanomagnetites**, catalysis of ammonia synthesis by, B., 99.
- Titanostearic acid**, alkali salts, A., 479.
- Toads**, formation of β -3-hydroxy-7:12-diketocholanic acid in, A., 1237.
 pharmacology of "senso" from secretion of, A., 1274.
- Toad poisons**. See under **Poisons**.
- Tobacco**, chemical properties and standardisation of, B., 124.
 treatment of, (P.), B., 525.
 with ultra-violet light, (P.), B., 254.
 for cigarettes, (P.), B., 381.
 conditioning of, (P.), B., 125, 381, 607.
 frenching of, B., 742.
 apparatus for irradiation of, (P.), B., 175.
 burning qualities of, B., 124, 969.
 slow-burning properties of, B., 782.
 solids from heating of, B., 782.
 effect of prolonged steam-distillation on, B., 205.
 combustibility of, B., 429.
 bases of, A., 635, 1387.
 carbohydrates in, A., 133; B., 381.
 extraction of citric acid from, B., 124.
 furfuraldehyde in, B., 91.
 glucoside from, A., 1550.
 extraction of inositol from, A., 1550.
 recovery of nicotine from, (P.), B., 430.
 reduction of nicotine content of, (P.), B., 878, 924.
 by electrolysis, B., 1117.
 nicotyrine in, A., 422.
 nitrogen in infusions of, A., 265.
 constants of resins in, B., 79.
 fractionation of resins of, A., 133.
 saponins in, A., 1040.
 reducing sugar in, B., 1118.
 sulphur metabolism of, A., 553.
 sulphur starvation in, B., 691.
 maintaining moisture content of, (P.), B., 125.
 formation of diketones from ingredients of, A., 421.
 fumigation of, with chloropicrin, B., 45.
 preservation of, (P.), B., 782.
- Tobacco**, survival of mosaic and ring-spot viruses in extracts of, A., 798.
 determination of polyphenol and Schmuks coefficients of, A., 1551.
 effect of smoking of, on metabolism, A., 118.
 cigar, determination in, of nicotine, B., 1118.
 Czechoslovakian, quality of, B., 1164.
 flue-cured, B., 1164.
 Havana seed, rate of growth and nitrogen assimilation of, B., 1061.
 makhorka, determination in, of carbohydrates, A., 1550.
 maxorochni, hydrogenation of, B., 1118.
 determination in, of moisture, B., 1118.
 of hygroscopic moisture, B., 1118.
 of citric acid, B., 1118.
 of nicotine, B., 1118.
 of pectic substances, B., 1118.
 mild and strong, differences between, B., 877.
 Norwegian, nicotine in smoke of, B., 253.
 raw, nicotine in, B., 174.
 Russian, "makhorka," nicotine content of smoke of, B., 45.
 strong, treatment of, with hydrochloric acid, B., 124.
 Turkish, toxicity of manganese to, in acid Kentucky soils, B., 282.
 Vorstenland, influence of lime status of volcanic Merapi ash soils on, B., 647.
 determination of quality of, B., 124.
 determination in, of ammonia, A., 133.
 of citric acid, A., 133; B., 749, 1118.
 of malic acid, A., 133.
 of nicotine, A., 133.
 of total resins, B., 79.
- Tobacco plants**, fertilisers for, B., 245.
 carbohydrates of, A., 1550.
 decomposition of nicotine in, A., 133.
 proteins of seeds of, A., 268, 1549.
 utilisation of stems of, B., 1164.
 production of cellulose and pentosans from stem of, B., 1118.
 as test plant for action of growth-substances, A., 1548.
 insecticidal action of anabasine sulphate on, B., 1159.
 diseases of, due to physiological changes, B., 822.
 boron deficiency in, under field conditions, B., 647.
 control of downy mildew of, B., 567.
 in covered seed-beds, B., 1061.
 leaf diagnosis of, B., 422.
 leaves, smouldering period of, B., 969.
 decomposition of hexose diphosphate by enzyme of, A., 403.
 sugar content of, in relation to mineral salt nutrition, A., 1039.
 curing of, B., 514.
 epidemiology of diseases of, B., 567.
 wild-fire disease in, A., 1181.
 control of, in Pennsylvania, B., 567.
 effect of nutrition on mosaic disease in, A., 798.
 virus in roots of, A., 1551.
 mosaic virus, B., 691.
 filtration of, A., 1182.
 estimation of concentration of, A., 1182.
 action of high-frequency waves on, A., 270.
 activity of preparations from, A., 798.
 effect of phosphate buffers on infectivity of, A., 1182.
 effect of proteoclastic enzymes on, A., 798.
 crystalline proteins with properties of, A., 1181.

Toluene compounds, Me = 1.

Tobacco plants, yellow mosaic infection of, B., 691.
 Tobacco-seed oil, B., 1054.
 use of, B., 1164.
 Tobacco smoke, composition of, B., 381, 606.
 aldehydes and ketones in, B., 381.
 absorption of nicotine from, B., 1117.
 action of cellulose filter-pads in cigarettes on nicotine content of, B., 653.
 nicotine taken up from, by the human organism, A., 656.
 resins in, B., 429.
 hæmolytic by, A., 881.
 acid and alkaline, B., 381.
Toddalia aculeata, A., 626.
 Toddolactone, and its derivatives, A., 626.
 Tolane, structure of, A., 967.
 Tolane, *o*-amino-, and its picrate, A., 1505.
oo'-dinitro-, A., 1118.
oo'-dinitro-, rat dyo from, and its conversion into di-indole, A., 1133.
 Tolanes, *o*-aminated, transformation of, into indole or indoline derivatives, A., 1505.
 Tolene, 3-thio-. See 3-Methylthiophen.
p-Tolualdehyde, electric moment of, A., 1447.
 di-*p*-tolylmercaptal, A., 970.
m-nitrobenzhydrazide and 2:4-dinitrophenylhydrazone, A., 743.
p-Tolualdehydechloroimine, A., 620.
m-Toluidine hydrochloride, A., 487.
 Toluene, vibrating mechanical model of, A., 568.
 separation of, from benzene and xylene in Shukkokko crude oil, B., 581.
 from Shukkokko crude gasoline, B., 179, 392, 535.
 scattering of light by, A., 565.
 molecular heat of, A., 1063.
 b.p. and equilibrium of mixtures of benzyl chloride and, A., 575.
 vapour pressure of, A., 22.
 catalytic hydrogenation of, by combined hydrogen, A., 334.
 effect of direct current on nitration and oxidation of, A., 589.
 electrochemical oxidation of, in phosphoric acid, A., 1114.
 sulphonation of, A., 1113.
 condensation of, with isopropyl alcohol, and its derivatives, A., 612, 739.
 with tertiary aliphatic alcohols, A., 967.
 reaction of, with aromatic aldehydes, in presence of aluminium chloride, A., 344.
 derivatives, reactive methyl group in, A., 74.
 production of benzaldehyde and benzoic acid from, B., 137.
 Toluene, 2:4:6-triamino-, and related amines, preparation of, A., 855.
 complex compounds of, with metallic chlorides, A., 944.
 hydrochloride, A., 613.
 hexabromo-, A., 1487.
p-chloro-, cryoscopy and association in, A., 162.
o-, *m*-, and *p*-nitro-, Raman spectra of, A., 1301.
 2-nitro-3-hydroxy-, acetate, A., 757.
 trinitro-, purification of, (P.), B., 396.
 analysis of mixtures of, with pentaerythritol tetranitrate, B., 335.
 2:4:5-trinitro-, action of β -aminoethyl alcohol on, A., 613.
 Toluenes, absorption spectra of, A., 913.
 Toluenes, monobromo-, nitration of, A., 480.

Toluene compounds, Me = 1.

o- and *p*-Tolueneazoacetacetic acids, nitro- and bromonitro-, ethyl esters, A., 502.
o- and *p*-Tolueneazo- γ -mono- and $\gamma\gamma$ -dibromoacetacetic acids, bromo- and bromonitro-, ethyl esters, A., 502.
p-Tolueneazoformhydroxamic acid, A., 855.
 4-Tolueneazo- β -hydroxynaphthanilide, 2-amino-, B., 988.
 6-Tolueneazo- p -hydroxynaphthanilide, 3-amino-, B., 988.
 2-*p*-Tolueneazo- α -naphthylamine, 4-bromo-, and its phthalimido-derivative, A., 1490.
o- and *p*-Tolueneazosalicylaldehydes, and their semicarbazones, A., 1239.
p-Tolueneazothiobarbituric acid, A., 762.
dl-*p*-Toluenesulphimic acid, *d*-(+)- β -butyl ester, A., 1230.
o-Toluenesulphonamide, oxidation of, by chromate, A., 995.
 γ -*p*-Toluenesulphonamidobutaldehyde diethylacetal, A., 1378.
 3-(β -*p*-Toluenesulphonamidoethyl)indole, and its dibenzoyl derivative, A., 1378.
p-Toluenesulphonamyl-*o*-toluidides, A., 206.
p-Toluenesulphon-*N*-*n*-amyl-*p*-toluide, A., 742.
p-Toluenesulphon-*N*-isoamyl-*m*- and -*p*-toluidides, A., 742.
p-Toluenesulphonbutyl-*o*-toluidides, A., 206.
p-Toluenesulphon-*N*-isobutyl-*p*-toluide, A., 742.
p-Toluenesulphon-*N*-ethyl-*m*-toluide, A., 742.
p-Toluenesulphonic acid, alanine, glycine, and leucine salts, A., 1486.
 alkali salts, activity coefficients of, in aqueous solutions, A., 1077.
 esters, alkylation of acetoacetic ester by, A., 1242.
 alkyl esters, reaction of, with Grignard reagents, A., 326.
 benzoyloxyethyl, β -ethoxyethyl, and ethylene glycol esters, A., 636.
 β -bromoethyl ester, A., 470.
 phenyl ester, reaction of, with magnesium phenyl bromide, A., 739.
dl-*p*-Toluenesulphonic acid, *d*-(+)- β -butyl ester, A., 1230.
 γ -*p*-Toluenesulphonmethylamidobutaldehyde diethylacetal, A., 1378.
 3-(β -*p*-Toluenesulphonmethylamidoethyl)indole, A., 1378.
 5-*p*-Toluenesulphonmethylamido-*o*-xylene, 4-nitro-, A., 94.
p-Toluenesulphon-*N*-methyl-*m*-toluide, A., 742.
p-Toluenesulphonpropyl-*o*-toluidides, A., 206.
p-Toluenesulphon-*N*-*n*-propyl-*m*-toluide, A., 742.
p-Toluenesulphon-*N*-isopropyl-*p*-toluide, A., 742.
p-Toluenesulphonyl chloride, differentiation of methylglucosides with, A., 847.
N-*p*-Toluenesulphonylbenzenesulphon-*p*-aminoanilide, and its *d*-camphor-10-sulphonate, A., 1118.
N-*p*-Toluenesulphonylbenzenesulphon-*p*-nitroanilide, A., 1118.
 2-*p*-Toluenesulphonyl-4:6-benzylidene- α -methylglucoside, and its 3-benzoyl derivative, A., 1225.
 α -*p*-Toluenesulphonyl- $\beta\beta$ -diphenylpropionic acid, A., 1115.
 γ -*p*-Toluenesulphonyl- β -phenylpropane- $\alpha\alpha$ -dicarboxylic acid, ethyl ester, A., 1115.
p-Toluenesulphonylisopropylideneshikimic acid, methyl ester, A., 1365.
p-Toluenesulphonylshikimic acid, methyl ester, A., 1365.

Toluene compounds, Me = 1.

4-*p*-Toluenesulphonyl-2:3:6-trimethylglucosido-1-pyridinium *p*-toluenesulphonate, A., 1109.
 β -*p*-Toluenesulphonyl- $\alpha\beta$ -triphenylethyl alcohol, A., 1116.
p-Toluenesulphonyltryptamine. See 3-(β -*p*-Toluenesulphonamidoethyl)indole.
p-Toluenethiolsulphonic acid, esters, A., 1114.
o-Toluic acid, 3:4:5-trihydroxy-, ethyl ester, A., 748.
o-Toluic acids, bromo-, preparation of, and their methyl esters, A., 341.
m-Toluic acid, 2:4:6-tribromo-, and its derivatives, A., 341.
 2:4:6-tribromo-3-bromo-, A., 341.
p-Toluic acid, 2-chloro-3:5-dinitro-4-chloro-, A., 341.
o-Toluidine, determination in, of nitro-compound, B., 584.
o-Toluidine, *p*-thiocyanato-, A., 1488.
m-Toluidine, 4- and 6-nitroamino-, sodium salt, (P.), B., 1132.
p-Toluidine, crystal structure of, A., 921.
 Toluidines, *p*-bromophenylthiocarbamides, A., 206.
 mercurichlorides, A., 1139.
m-Toluidine-6-sulphonic acid, A., 206.
 α -*p*-Toluidino- Δ^{β} -butylene, and its derivatives, A., 206.
S-*p*-Toluidinotrichloromethylthiol, A., 854.
 9-Toluidino-3:6-diethoxy-10-ethylacridinium chlorides, A., 1132.
 9-Toluidino-3:6-diethoxy-10-methylacridinium chlorides, A., 1132.
 9-Toluidino-3:6-dimethoxy-10-ethylacridinium chlorides, A., 1132.
 9-Toluidino-3:6-dimethoxy-10-methylacridinium chlorides, A., 1132.
 4-*p*-Toluidino-2:3-diphenyl-6-methylquinoline, and its picrate, A., 357.
 4-*p*-Toluidino-2-dodecyloxyanthraquinone, 1-amino-, manufacture of, (P.), B., 763.
o-Toluidino-*N*-methylenesulphoxylic acid, sodium salt, tetrahydrate, A., 100.
 4-*m*-Toluidino-2-phenyl-5-methylquinoline, and its derivatives, A., 222.
 4-Toluidino-2-phenylmethylquinolines, and their derivatives, A., 357.
 (-)- β -*p*-Toluidino- α -phenylpropane, A., 1230.
 2-*p*-Toluoylbenzoic acid, and its methyl ester, A., 1372.
 2-*p*-Toluoyl-3:6-dimethylnaphthalene, A., 335.
 2-*p*-Toluoyl-4:5-dimethyl- Δ^4 -tetrahydrobenzoic acid, A., 1372.
p-Toluoyldimethyl-1:2:3:4-tetrahydronaphthalenes, A., 335.
 β -*o*-Toluoylthane- $\alpha\alpha$ -dicarboxylic acid, ethyl ester, and its 2:4-dinitrophenylhydrazones, A., 1236.
p-Toluoylformic acid, bornyl and menthyl esters, A., 975.
 2-*o*-Toluoylphenanthrene, A., 980.
 2-*p*-Toluoyl- Δ^4 -tetrahydrobenzoic acid, A., 1372.
 Toluquinolines, dichloriodides and iodo-cyanides, A., 356.
 3-*p*-Toluy-5-phenyl-1:2:4-oxadiazole, and its phenylhydrazones, A., 763.
 Tolyl anisyl ethers, A., 483.
 cholesterylcarbonates, A., 745.
 $\gamma\gamma$ -diethoxy-*n*-propyl ethers, A., 846.
 β -methylallyl ethers, A., 483.
o-Tolyl alkyl sulphides, 4-hydroxy-, and their germicidal properties, A., 79.
m-Tolyl benzoyl- and carboxy-nitrophenyl sulphides, 4-hydroxy-, and their derivatives, A., 1490.

Toluene compounds, Me = 1.
m-Tolyl methyl ether, bromonitro-derivatives, A., 1506.
p-Tolyl desyl sulphide, A., 1116.
p-methoxyphenyl and *p*-hydroxyphenyl sulphides, and their phenolic derivatives (P.), B., 841.
 styryl sulphide and sulfoxide, A., 1115.
o-Tolylacetophenone, *o*-nitro-*o*-*p*-thio-, and its nitronic methyl ester, A., 334.
 Tolyl-*N*-acetyl-4'-chlorophenylcarbamides, A., 1118.
p-Tolyl-*α*-acetyl- $\beta\beta$ -diphenylethylsulphone, A., 1115.
 4-*p*-Tolylamino-2-*p*-chlorophenyl-6-methylquinoline, and its salts and derivatives, A., 357.
o-Tolyl-*l*-arabinosamine, 5-amino-, acetyl derivative, A., 359.
α-Tolyl-*l*-arabinozide, A., 1110.
p-Tolylarsinic acid, 3-nitro-, conversion of, into 3-amino-4-carboxyphenylarsinic acid, A., 768.
p-Tolyl-*p*-benzoquinone, A., 86.
p-Tolyl-*α*-benzoyl- $\beta\beta$ -diphenylethylsulphone, A., 1115.
m-Tolylbenzoylnitrophenylsulphones, 4-hydroxy-, A., 1490.
 1-*p*-Tolyl-1:2:3-benzotriazole, 5-amino-, and 5-nitro-, A., 226.
p-Tolyl-*α*-bromo- $\beta\beta$ -diphenylethylsulphone, A., 1115.
s-*p*-Tolyl-*o*-bromo-*p*-tolylthiocarbamide, A., 1136.
 Tolylocarbamic acids, cholesteryl esters, A., 209.
o-Tolylcarbamide, *p*-thiocyano-, A., 1488.
m-Tolylcarboxynitrophenylsulphinic acids, 4-hydroxy-, A., 1491.
m-Tolylcarboxynitrophenylsulphones, 4-hydroxy-, A., 1490.
p-Tolyl-*aa*-dichloro- $\beta\beta$ -diphenylethylsulphone, A., 1116.
 2-Tolyl-4'-chlorophenylcarbamide, A., 1118.
 4-Tolyl-4'-chlorophenylcarbamide, 3-bromo-, and 3-nitro-, A., 1118.
 Tolyl-*N*-*p*-chlorophenylurethanes, A., 998.
p-Tolylcinchoninic acid, ethyl ester. See Tolsin.
p-Tolylcyanamide, A., 482.
 2-*m*-Tolyl-4:6-dimethylquinoline, 2:2'-amino-, and its salts and derivatives, A., 758.
s-*p*-Tolyl-2-methylthiocarbamide, *s*-*o*-bromo-, A., 503.
 2-*o*-Tolyl-2-phenyl-2'-carboxylic acid, and its strychnine salt, A., 211.
p-Tolyl- $\beta\beta$ -diphenylethylsulphone, A., 1115.
m-Tolylenediamine dipyrocatechol borate, (P.), B., 841.
 4-*p*-Tolylethylamino-2-phenyl-6-methylquinoline, A., 357.
 Tolyethylcarbamides, A., 1155.
m-Tolyl ethyl ketone derivatives, A., 973.
 9-*p*-Tolylfluorenyl 9-peroxide, A., 1358.
 Tolyformamidinethiolacetic acids, and their hydrochlorides, A., 365.
p-Tolyl-2-furylisobutylcarbinol, A., 626.
p-Tolyl-2-furylthylcarbinol, and its benzoate, A., 626.
p-Tolyl-2-furyl-*n*-propylcarbinol, A., 626.
o-Tolyl-*d*-glucosamine, 5-amino-, acetyl derivative, A., 359.
 β -Tolylglutaconic anhydrides, β -hydroxy-, and their derivatives, A., 353.
p-Tolylglyoxal, dismutation of, A., 1282.
p-Tolylglyoxalosazones, A., 752.
 2-Tolyl- γ -heptyl ketone, 4-hydroxy-, production of, (P.), B., 761.

Toluene compounds, Me = 1.
 Tolyhydrazines, preparation of, electrochemically, A., 77.
 2-*p*-Tolylimino-4-keto-3-*o*-bromo-*p*-tolyl-5:5-dimethyltetrahydrothiazole, A., 1136.
 2-*p*-Tolylimino-4-keto-3-*o*-bromo-*p*-tolyl-5-methyltetrahydrothiazole, A., 1135.
 2-Tolylimino-4-ketotetrahydrothiazoles, A., 365.
 2-*p*-Tolylimino-4-keto-3-*p*-tolyl-5:5-dimethyltetrahydrothiazole, and its hydroperbromide, A., 1136.
 2-*p*-Tolylimino-4-keto-3-*p*-tolyl-5-methyltetrahydrothiazole, A., 1135.
 Tolyiminotolyl-4-(3:4'-*d*-hydroxyphenyl)-2:3-thiazolines, A., 1511.
 2-*p*-Tolylindazole, 6-nitro-3-hydroxy-, and its acetyl derivative, A., 502.
 2-*p*-Tolylindazole 1-oxide, 6-nitro-3-hydroxy-, and its derivatives, A., 502.
 4:6-dinitro-3-hydroxy-, and its derivatives, A., 502.
p-Tolyl-*α*-iodo- $\beta\beta$ -diphenylethylsulphone, A., 1116.
o-Tolyl-*α*-maltoside heptaacetate, and *o*-bromo-, A., 848.
o-Tolyl-*α*-maltoside, amino-, octastearate and stearyl derivative, A., 848.
p-Tolylmaltosides, heptaacetates, A., 848.
p-Tolyl-*α*-maltoside, hydroxy-, heptaacetate, A., 848.
p-Tolylmercuric acetate, lactate, and nitrate, A., 997.
 Tolymercurichlorides, nitrohydroxy-derivatives of, (P.), B., 655.
 4-*p*-Tolylmethylamino-2-phenyl-6-methylquinoline, A., 357.
p-Tolylmethylglycollic acid, synthesis of, A., 975.
p-Tolylmethylglycollic acids, A., 489.
 6-*p*-Tolyl-2-methylpyridine-3-carboxylic acid, and its ethyl ester and its picrate, A., 1250.
 1-*p*-Tolyl-1-methylthiobiuret, A., 1488.
 4-*o*-Tolyl-2-methyl-2-phenyl-6-methylquinoline-1-diazonium chloride, production of, (P.), B., 985.
S-*p*-Tolyl-2-methyl-2-phenyl-6-methylquinoline-1-thiol, A., 854.
p-Tolyl- β -phenylethylsulphone, A., 1115.
α-*o*-Tolylphthalide, α -5-hydroxy-, A., 80.
 β -Tolylpropionic acids, β -4-bromo-, and their ethyl esters, A., 853.
 1-*o*-Tolylpyridinium perchlorate, A., 1505.
p-Tolylquinol, A., 87.
 2-*p*-Tolylquinoline-4-carboxylic acid, glyceryl and $\beta\beta'$ -dichloroisopropyl esters of, (P.), B., 974.
o-Tolylsemicarbazide, as reagent for identification of aldehydes and ketones, A., 1259.
m-Tolylstannic acid, A., 769.
o-Tolyl styryl ketone, A., 492.
p-Tolyl styryl ketone. See *p*-Methylchalkone.
p-Tolylstyrylsulphones, A., 1115.
 β -*m*-Tolylthioacetyl- α -phenyl- α -*S*-dimethylhydrazine, A., 1119.
 β -*m*-Tolylthioacetyl- α -phenyl- α -methylhydrazine, A., 1119.
m-Tolylthiobiuret, A., 1488.
o-Tolyl-*p*-thio-*o*-tolylcarbamide, A., 1488.
 β -*p*-Tolylthiol- β -phenylpropionic acid, methyl ester, A., 975.
p-Tolyl- β -*p*-tolylthiol- β -phenylethylsulphone, A., 1115.
 Tolytriazines, aminohydroxy-, and their salts, A., 1254.
 Tolytrimethylammonium salts, and their reduction by sodium amalgam, A., 76.

Toluene compounds, Me = 1.
 γ -*p*-Tolyltrimethylethylene glycol, A., 976.
p-Tolyl- $\alpha\beta\beta$ -triphenylethylsulphone, A., 1116.
p-Tolyl- $\beta\beta\beta$ -triphenylethylsulphone, and trinitro-, A., 1116.
o-Tolyl-*d*-xylosamine, 5-amino-, acetyl derivative, A., 359.
 Tolsin, elimination of uric acid from liver by, A., 528.
 Tomatoes, effect of heat on red and yellow pigments of, B., 250.
 storage of, B., 378.
 effect of continued feeding with, A., 1013.
 "blotchy," potassium content of pulp of, B., 741.
 Mexican, antiscorbutic properties of, A., 546.
 Tomato juice, composition and colour of, B., 521.
 canned, composition of, B., 122.
 home-canned, vitamin-B₂ in, B., 572.
 Tomato plants, effect of boron-iron ratio on growth of, B., 1011.
 influence of chlorides on growth of, A., 418.
 effect of increased iodine content on respiration and enzyme activity of, A., 419.
 fertilisers for, B., 741.
 effect of fertilisers on, infected with *aucuba* mosaic, B., 373.
 effect of carbon dioxide on, B., 689.
 glutamine in, A., 134.
 nitrate in soil for, B., 373.
 potassium in drainage from greenhouses for, B., 373.
 water relationships of, A., 1037.
 fumigation of, with cyanides, B., 742.
 symptoms of mineral deficiency in, B., 245.
 effect of potassium deficiency on, A., 553.
 spraying for control of caterpillars on, B., 741.
 control of leaf mould of, B., 374.
 control of leaf mould and red spider mite on, B., 374.
 chemical fission of virus complex of, A., 798.
 physiology of mosaic disease of, A., 554.
 virus of yellow mosaic of, B., 691.
 control of psyllids on, with sulphur, B., 1012.
 control of spotted wilt of, B., 822.
 seedling, effect of light on growth of, A., 1038.
 effect of light and temperature on assimilation by, A., 549.
 absorption of ammonium- and nitrate-nitrogen by, A., 1037.
 translocation in, A., 549.
 water content and assimilation of, A., 549.
 analysis of tissues of, for determination of fertiliser requirements, B., 742.
 Tomato pulp, analysis of, B., 1020.
 Tomato purée, vitamin-C in, B., 747.
 Tonalite of Loch Awe, Argyll, A., 725.
 Tonsils, human, action of extracts of, on glycogen production in liver, A., 668.
 Tonsillary extracts, effect of, on diuresis and sodium chloride elimination, A., 1267.
 Tools, grinding and polishing of, (P.), B., 557.
 cutting, sintered carbide alloys for, (P.), B., 1148.
 hard chromium-cobalt alloys for, (P.), B., 505.
 pressing, drawing, and stamping, annealing of, (P.), B., 235.

- Tooth pastes, acid, manufacture of, (P.), B., 288.
- Topaz, A., 1100.
- from Devil's Head, Colorado, A., 956.
- Tortoise, Greek, fatty acids of depôt-fat, liver-phosphatides, and -oil of, A., 645.
- Tortoishell, bleaching of, (P.), B., 819.
- Torulene, A., 254.
- Totaquina, Philippine, B., 923.
- Tourmalines, composition, colour, and spectrographic analysis of, A., 1345.
- Towers, bubble caps for, (P.), B., 610.
- absorption, (P.), B., 1076.
- bubble-cap, entrainment in, B., 753.
- bubbling, (P.), B., 1076.
- removal of mists in, (P.), B., 1076.
- cooling. See under Cooling apparatus.
- dry packed, pressure drop through, B., 177.
- reaction, filling of, (P.), B., 881.
- spray, absorption of gases in, B., 530.
- Toxaemia in relation to carbohydrate metabolism, A., 536.
- pre-cleampting, ketone content of blood in, A., 385.
- Toxic filtrates, formolised, reactions of, A., 1519.
- apo-Toxicarol, constitution of, A., 868.
- Toxicity in relation to concentration and time, A., 1275.
- Toxins, bacterial, manufacture of medical preparations of, (P.), B., 478.
- Toxoflavin, oxidation-reduction potential of, A., 407.
- Toys, dyes for, B., 847.
- Tracing paper. See under Paper.
- Tradescantia fluminensis*, wound healing in, A., 1547.
- Transfers, manufacture of, (P.), B., 944.
- Transfer sheets, production of, (P.), B., 110.
- Transformers, copper steel for, B., 855.
- Transformer oils, (P.), B., 1128.
- manufacture of, (P.), B., 794.
- electrical properties of, B., 1125.
- conduction through, at high field strengths, B., 731.
- mechanism of discharges through, B., 438.
- oxidation of, B., 134, 484.
- use of chlorinated hydrocarbons as, B., 661.
- treatment of containers for, (P.), B., 555.
- Transition processes, study of, with Weissenberg X-ray goniometer, A., 465.
- Transmutation, artificial, by the cloud-track method, A., 558.
- Transparent sheets, (P.), B., 846.
- manufacture of, from casein, (P.), B., 1041.
- Transpiration in relation to pressure, A., 794.
- Transport numbers of electrolytes in aqueous solutions, A., 1078.
- Transport phenomena, wave mechanics of, A., 1187.
- Trass, zeolitic nature of, B., 528, 632.
- influence of, on plaster, B., 24.
- absorption of organic dyes on, and its use as a decolorising powder, B., 14.
- use of, in water softening, B., 1.
- Trauma, effect of, on dogs with or without adrenals, A., 1422.
- Traumatic shock, changes in adrenal cortex following, A., 1403.
- Traumatism, effect of, on chlorine and sodium distribution, and on acid-base balance, A., 652.
- on distribution of chlorine and sodium in blood and tissues, A., 1528.
- Travertine, deposition of, from water from Virginia, A., 1477.
- Trees, growth of, on Scottish moorlands, B., 371.
- roots of, B., 372.
- surface area and spraying of, B., 247.
- catalase activity and viability of seeds of, A., 1179.
- injection of, B., 1014.
- Canadian, water content of, A., 1179.
- Triacetin, effect of zinc salts on hydrolysis of, by pancreatic lipase, A., 404.
- Triacetoxyanthracenes, and bromo- and dichloro-, A., 217.
- 9:11:12-Triacetoxy-1:4-dihydronaphthacene, A., 217.
- Triacetoxy-2:6-dimethylnaphthalene, A., 216.
- Triacetoxy-2:5-diphenylbenzene, A., 87.
- Triacetylacetic acid, ethyl ester, formation of, A., 1508.
- 3:6:9-Triacetylcarbazole, A., 990.
- 2:3:6-Triacetyl-4-dichloroacetyl- β -methylglucoside, A., 1225.
- Triacetyldihydroshikimic acid, and its derivatives, A., 1365.
- Triacetylglycuronic acid, methyl ester, *p*-nitrobenzylglycoside, and 1-chloro-, methyl ester, methylglycoside, A., 1352.
- Triacetylglycuronic acid, α -bromo-, methyl ester, and α -chloro-, methyl ester and its β -methylglucoside, A., 1483.
- Triacetyl-leucoperezone, A., 1501.
- 2:3:4-Triacetyl- α -methyl-*d*-galacturonide, methyl ester, A., 608.
- Triacetyl- β -methylglucosidyl methyl carbonate, A., 1354.
- Triacetylshikimic acid, A., 1365.
- Trialkylamines, manufacture of, (P.), B., 1130.
- Trianhydrostrophanthidin, constitution of, A., 396.
- s*-Trianisylbenzene, A., 483.
- Tri-*p*-anisylmethyl chloride ferrichloride, A., 487.
- 2:4:6-Trianisyl-3-methylpyrylium salts, A., 1377.
- 2:4:6-Trianisylpyrylium salts, A., 1377.
- Triaryl phosphates, manufacture of, (P.), B., 263, 1085.
- Triarylmethyl derivatives, constitution of, A., 487.
- Triarylmethylthiolacetic acids, halochromic salts from, A., 486.
- Triarylpyrylium borofluorides, A., 1504.
- γ -Triazines, A., 224, 870, 1254, 1382.
- Triazinylformaldehyde, dihydroxy-, and its salts, A., 225.
- Triazolium salts, A., 359.
- Tri- β -benzoylethylamine, and its salts, A., 355.
- 2:3:4-Tribenzoyl- α -methyl-*d*-galacturonide, methyl ester, A., 608.
- 2:3:4-Tribenzoyl-1-phenylcyclopentane 1:2-oxide, A., 1500.
- 2:3:4-Tribenzoyl-1-phenylcyclopentan-1-ols, A., 1499.
- 2:3:4-Tribenzoyl-1-phenyl- Δ^1 -cyclopentene, and its 1:2-peroxide, A., 1500.
- $\alpha\beta\gamma$ -Tribenzoylpropane. See β -Phenacyl- $\alpha\delta$ -diphenyl-*n*-buta- $\alpha\delta$ -dione.
- Tribenzyl thioantimonite, A., 1390.
- thioarsenite, A., 1390.
- Tri(benzylamino)arsine trihydrochloride, A., 1139.
- Tribenzylarsine, preparation of, and its oxybromide, A., 1138.
- Tribenzylidenesorbitol, trichloro-, detection of, by means of acetone, A., 325.
- Tribolium confusum*. See Beetles, flour.
- Tribromogold. See under Gold.
- Tribromosilane. See Silicon hydrotribromide.
- Tributyl tetraethio-orthosilicate, A., 326.
- Tri-*n*-butylamine, dissociation constant of, A., 581.
- dipyrrocatechol borate, (P.), B., 841.
- Tri-*tert*-butylthiolsilicon oxide and hydroxide, A., 326.
- Tricarballic acid, α -amino-, and its copper salt and derivatives, A., 850.
- dissociation constant of, A., 1203.
- Tricarboyanine dyes, production of, (P.), B., 398.
- Trichiniasis, effect of irradiated ergosterol and calcium lactate on calcification in, A., 776.
- Tricholesteryltricarboic acid, pyrogallol and phloroglucinol esters, A., 745.
- Trichophyton gypsum*, action of cinnamic acid, iodine, and mercuric chloride on growth of, A., 788.
- Trichophyton interdigitale*, growth and metabolism of, A., 405.
- Trichosanic acid, A., 960.
- Trichosanthes cucumeroides*. See Karasu-
uri.
- Trichuris trichiura*, anthelmintic action of phenols against, A., 1412.
- Tricosodilactone, ψ -hydroxy-, A., 1351.
- Tricosolactone, ψ -hydroxy-, A., 1351.
- Tricyclic compounds with naphthalene and heterocyclic component, A., 761.
- Tridacna gigas*. See Shako.
- Tridecodilactone, μ -hydroxy-, A., 1351.
- Tridecolactone, μ -hydroxy-, A., 1351.
- Trideuteracetic deuteracid, A., 731.
- Raman spectrum of, A., 806.
- Trideuterammonia, dipole moment of, A., 1055.
- infra-red spectrum of, A., 145.
- rotation spectrum of, A., 806, 1444.
- energy levels for, A., 569.
- kinetics of photodecomposition of, A., 47.
- decomposition of, on tungsten, A., 710.
- Trideuterophosphine, Raman spectrum of, A., 1445.
- Tri(dibenzylamino)arsine trihydrochloride, A., 1139.
- 1-Tri-*p*-dimethylaminodiphenylstyrylmethane, and its compound with zinc chloride, A., 209.
- Tri(diisopropylideneglucose), salts of, A., 68.
- Triethanolamine. See Triethylamine, $\beta\beta'\beta''$ -tri-hydroxy-.
- Triethylamine, distribution of, between water and aromatic hydrocarbons, A., 441.
- Triethylamine, triamino-, hydrochlorides, crystal structure of, A., 687.
- $\beta\beta'\beta''$ -trichloro-, A., 1228.
- and its salts, A., 849.
- $\beta\beta'\beta''$ -tri-hydroxy-, reaction of, with hydrobromic acid, A., 71.
- use of, in insulating materials, lacquers, paints, and resins, B., 1151.
- detection and determination of, B., 347.
- o*-2:4:6-Triethylbenzoylbenzoic acid, A., 859.
- Triethylcarbonylbenzene, *p*-amino-, and its derivatives, A., 1488.
- Triethylenediaminecobaltic salts, A., 946.
- Triethyl- β -hydroxyethylammonium bromide, tri- β -bromo-, A., 71.
- Triethylolamine, reactivity and p_H of, A., 849.
- Tri-*p*-ethylphenylmethyl chloride and peroxide, A., 1115.

- Triethylsulphinium hydroxide, *tri-β-hydroxy*, A., 606.
 Trieunite, A., 1221.
Trifolium pratense. See Clover, red.
 Triformylcholic acid, and its derivatives, A., 1237.
 Trifurylarsine, A., 997.
 Triglycerides, heats of transition of, A., 1324.
 velocity of saponification of, by ethyl-alcoholic potash, A., 709.
 Triglycyl-L-leucylglycine, A., 1416.
 Trigonelline flavanate, A., 639.
 $\beta\gamma\delta$ -Triketo- $\alpha\delta$ -di-*p*-anisyl-*n*-butane, α -hydroxy-. See Dianisoylformoin.
 $\alpha\gamma\delta$ -Triketo- $\alpha\delta$ -di-*p*-bromophenyl-*n*-butane, β -hydroxy-, A., 1372.
 $\alpha\gamma\delta$ -Triketo- $\alpha\delta$ -di-*p*-chlorophenyl-*n*-butane, β -hydroxy-, A., 1372.
 $\alpha\gamma\delta$ -Triketo- $\alpha\delta$ -diphenyl-*n*-butane, β -hydroxy-, alkylation of, A., 982.
 Triketohydrindene hydrate. See Ninhydrin.
 2:4:5-Trimethoxy-1-allylbenzene from calamus roots, A., 1041.
 3:4:5-Trimethoxybenzoic acid, 2-acetyl- α -naphthyl ester, A., 91.
 3-(3:4:5-Trimethoxybenzyl)-3:4:5:6-tetrahydronorharman, A., 1388.
 3-(3:4:5-Trimethoxybenzyl)-3:4:5:6-tetrahydronorharman-3-carboxylic acid, A., 1388.
 2:3:4-Trimethoxy-6-carboxyphenylacetic acid, and its esters, salts, and anhydride, A., 620.
 3:4:5-Trimethoxy-2- $\beta\beta$ -dichloroethylbenzoic acid, and its lead salt, A., 620.
 3:4:5-Trimethoxy- α -trichloromethylphthalide-6-acetic acid, A., 620.
 5:7:8'-Trimethoxychromeno-[3':4':2:3]-chromone, A., 1130.
 3:4- α -Trimethoxyethylbenzene, β -nitro-, (P.), B., 478.
 1-(*arabo*)-Trimethoxyglutaric acid, dimethyl ester, A., 196, 200.
 1:3:5-Tri-*p*-methoxycyclohexylcyclohexane, A., 483.
 2:4:5-Trimethoxy- β -hydroxylamino- α -methoxy-*n*-propylbenzene, A., 971.
 5:3':5'-Trimethoxy-3-methyl-1'-*n*-amyl-diphenyl ether, 2:4:2'-tribromo-, A., 490.
 3':4':5'-Trimethoxy- α -naphthylflavone, A., 91.
 2:4:5-Trimethoxy- β -nitro- α -methoxypropylbenzene, A., 971.
 2:3:4-Trimethoxyphenyl aminostyryl ketones, A., 85.
 α -2:3:4-Trimethoxyphenylethylene, β -bromo- β -nitro-, A., 616.
 β -3:4:5-Trimethoxyphenylethylpyridinium bromide, β -hydroxy-, A., 1131.
 2:3:4-Trimethoxyphenyl nitrostyryl ketones, A., 85.
 2:4:6-Tri-*p*-methoxyphenylpyrylium borofluoride, A., 1504.
 2-2':3':4'-Trimethoxyphenylquinoline, A., 85.
 2:3:4-Trimethoxystyrene dibromide, A., 616.
 2:3:5-Trimethoxy-*p*-xylene, and 6-bromo-, A., 982.
 2:4:5-Trimethoxy-*m*-xylene, and 6-bromo-, A., 982.
 Trimethyl-*p*-acetamidobenzylammonium iodide, A., 1232.
 Trimethylacetonylsulphonylacetic acid, and its salts and esters, A., 493.
 α -Trimethylacetonylsulphonylethyl β -peroxide, A., 493.
 Trimethylalloxazines, A., 1510.
 Trimethylallylarsonium iodide, A., 738.
 Trimethylamine, manufacture of, (P.), B., 1130.
 separation of, from ammonia, (P.), B., 262.
 scattering of X-rays by, A., 432.
 vapour pressure curve of, A., 290.
 m.p. of, A., 815.
 m.p. and vapour pressure of, A., 574.
 solubility of cholesterol in, A., 1235.
 in human expired air, A., 112.
 Trimethyl-*p*-aminobenzylammonium chloride hydrochloride, A., 1232.
 β -Trimethylaminoethylglyoxaline, and its chloride hydrochloride and picrate, (P.), B., 830.
 4(5)- β -Trimethylaminoethylglyoxaline salts, A., 759.
 γ -Trimethylamino- β -hydroxypropanesulphonobetaine, A., 1111.
 Trimethyl- β -*p*-aminophenylethylammonium chloride hydrochloride, A., 1232.
 α -Trimethylammonioacetic acid, ethyl ester, bromide, A., 332.
 α -Trimethylammonio- α -methyl-*n*-butyric acid, ethyl ester, salts of, A., 331.
 α -Trimethylammonioisopropionic acid, ethyl ester, salts of, and their racemisation, A., 331.
 Trimethylarsine, production of, by fungi, A., 1027.
 2':4':6'-Trimethylbenzoin, synthesis of, A., 1499.
 3-2':4':6'-Trimethylbenzoyl-2-phenylquinazoline, A., 1499.
 Tri-*p*-methylbenzyl thioarsenite, A., 1390.
 1:3:7-Trimethylcaffolide, A., 361.
 Trimethylcarbinol, amino-, A., 1510.
 3:3':5'-Trimethyl-4'- β -carbomethoxyethylpyrromethene, 5-bromo-, hydrobromide, A., 633.
 3:3':5'-Trimethyl-4- β -carboxyethylpyrromethene, 5-hydroxy-, A., 633.
 Trimethylcellulose, preparation of, A., 1356.
 fractionation of, A., 1356.
 O-Trimethylcyanomacurin, and its acetyl derivative, A., 985.
 $\gamma\delta\eta$ -Trimethyl- $\gamma\eta$ -diethyl- Δ^6 -nonen- δ -one, A., 476.
 1:3:9-Trimethylspirodihydantoin, 7-acetyl derivative, A., 225.
 Trimethyl-1:2-dihydrobenzofurans, A., 484.
 Trimethyldihydric acids, dichloro- and chlorohydroxy-, and their acetyl derivatives, A., 361.
 4:3':5'-Trimethyl-3:4'-dipropylpyrromethene, 5-hydroxy-, and its bromination, A., 362.
 $\beta\zeta\kappa$ -Trimethyl- $\Delta^{2\eta\eta}$ -dodecapentaenal. See Farnosinal.
 $\gamma\eta\lambda$ -Trimethyl- $\Delta^{2\eta\eta}\kappa$ -dodecapentaenol. See Farnesinol.
 Trimethylene bromide, action of, on ethyl acetonedicarboxylate, A., 1497.
 chloride, dipole moment of, A., 916.
 α -Trimethylene disulphide sulphide and its perchlorate, A., 471.
 γ -Trimethylene trisulphide perchlorate and disulphide sulphide perchlorate, and its derivatives, A., 471.
 Trimethylene glycol- α -glucoside, A., 1485.
 2:3-Trimethylene-4-quinazolone, and its benzylidene derivative, and 2:3- α -chloro-, A., 873.
 Trimethylenetetrazole, action of, on the heart, A., 1020.
 Trimethylenetrinitroamine, preparation of, A., 760.
 Trimethylenetriphenylmethane triketone, reduction products of, A., 205.
 1:3:3-Trimethyl-2'-ethylindothiacyanine iodide, manufacture of, (P.), B., 398.
 3:3':5'-Trimethyl-4'-ethyl-4:5-cyclopentenopyrromethine, and its salts, A., 870.
 4:4':5'-Trimethyl-3-ethylpyrromethene, 5:3'-dibromo-, and its hydrobromide, and 3'-bromo-5-hydroxy-, A., 633.
 4:5:4'-Trimethyl-3-ethylpyrromethene, 3'-mono- and 3':5'-di-bromo-, and their hydrobromides, and 3'-bromo-5'-hydroxy-, A., 633.
 4:3':5'-Trimethyl-3-ethylpyrromethene-5-carboxylic acid, and its hydrobromide, A., 633.
 4:4':5'-Trimethyl-3-ethylpyrromethene-5-carboxylic acid, and its hydrobromide, A., 633.
 6:7:9-Trimethylflavin. See Lumilactoflavin.
 3:4:5-Trimethylfructose, A., 1484.
 Trimethylglucose, partition of, between chloroform and water, A., 695.
 2:3:6-Trimethylglucose, formation of 2:3:6-trimethyl-*l*-idose from, A., 1109.
 4-*p*-toluenesulphonate and 1-acetate 4-*p*-toluenesulphonates, and 1- α -chloro-, 4-*p*-toluenesulphonate, A., 1109.
 2:3:6-Trimethylglucose anhydride, A., 1484.
 Trimethylgulomethylono- γ -lactone, A., 1483.
 Trimethylhazeic acid, A., 757.
 π -Trimethylheptadecabetaïne, and its salts, A., 479.
 $\beta\delta\zeta$ -Trimethylheptane, δ -bromo-, A., 844.
 $\gamma\delta\epsilon$ -Trimethyl- Δ^6 -*n*-hepten- γ -ol, A., 847.
 $\beta\epsilon\zeta$ -Trimethyl- Δ^6 -hepten- γ -one, and its derivatives, A., 476.
 2:2:4-Trimethyl- $\Delta^{2\epsilon}$ -cyclohexadienealdehyde, and its semicarbazone, A., 1353.
 $\beta\gamma\gamma$ -Trimethylhexaldehyde semicarbazone, A., 963.
 $\beta\gamma\epsilon$ -Trimethylhexane, β -bromo-, A., 844.
 $\beta\delta$ -Trimethyl-*n*-hexan- β -ol, A., 847.
 $\delta\epsilon\epsilon$ -Trimethylhexan- β -one, and its semicarbazone, A., 963.
 $\delta\epsilon$ -Trimethyl- Δ^2 -hexene, A., 1348.
 $\beta\delta$ -Trimethyl- Δ^7 -*n*-hexen- β -ol, A., 847.
 ϵ -2:2:6-Trimethyl- Δ^6 -cyclohexenyl- $\gamma\eta$ -dimethyl- $\Delta^{2\eta\eta}$ -nontetraene, A., 611.
 α -(2:2:6-Trimethyl- $\Delta^{1\epsilon}$ -cyclohexenyl)- γ -methyl- Δ^6 -heptadien- Δ^6 -inene, γ -hydroxy-, and its derivatives, A., 983.
 ζ -(2:2:6-Trimethyl- Δ^6 -cyclohexenyl)- δ -methyl- $\Delta^7\epsilon$ -hexadiene- α -carboxylic acid, β -hydroxy-, ethyl ester, A., 978.
 ϵ -2:6:6- Δ^1 -Trimethylcyclohexenyl- γ -methyl- $\Delta^{2\eta\eta}$ -pentadiene, α -bromo-, A., 492.
 ϵ -2:6:6- Δ^1 -Trimethylcyclohexenyl- γ -methyl- $\Delta^{2\eta\eta}$ -pentadien- α -ol, and its hydrogen phthalate, A., 492.
 ϵ -2:6:6- Δ^1 -Trimethylcyclohexenyl- γ -methyl- Δ^6 -penten- Δ^6 -inene, γ -hydroxy-, A., 492.
 α -2:6:6-Trimethyl- Δ^1 (or Δ^2)-cyclohexenyl- Δ^7 -penten- β -one, A., 751.
 ϵ -2:6:6-Trimethylcyclohexyl- γ -methylpentan- γ -ol, and its acetyl derivative, A., 492.
 ϵ -2:6:6-Trimethylcyclohexyl- γ -methyl- Δ^6 -pentene, α -bromo-, A., 492.
 ϵ -2:6:6-Trimethylcyclohexyl- γ -methyl- Δ^6 -penten- α -ol, and its hydrogen phthalate, A., 492.
 ϵ -2:6:6-Trimethylcyclohexyl- γ -methyl- Δ^6 -penten- γ -ol, A., 492.
 ϵ -2:6:6-Trimethylcyclohexyl- γ -methyl- Δ^6 -pentinen- γ -ol, A., 492.
 δ -(2:2:6-Trimethylcyclohexyl)- β -methylvaleric acid, β -bromo-, ethyl ester, A., 978.
 2:3:6-Trimethyl-*l*-idose, and its anhydride, A., 1109.

- 2:3:5-Trimethylindole picrate, A., 206.
 2:2:4-Trimethyl-3- γ -keto- Δ^4 -butenylcyclohexane, 1-chloro-, A., 979.
 1:1:3-Trimethyl-2- γ -keto- Δ^4 -butenyl- Δ^5 -cyclohexene, and its phenylhydrazone, A., 979.
 Trimethyl-leucoperezone, A., 1501.
 2:3:4-Trimethylmannopyranose, A., 477.
 2:3:4-Trimethyl- α -mannuronide, A., 732.
 2:4:5-Trimethyl-3-methylenethia- Δ^4 -cyclopentene 1:1-dioxide, and its derivatives, A., 498.
 2:3:6-Trimethylmethylglucoside 4-*p*-toluenesulphonate, A., 1109.
 2:3:4-Trimethylmethylmannopyranoside, A., 477.
 $\epsilon\zeta\eta$ -Trimethyl- Δ^4 -nonen- ϵ -ol, A., 847.
 $\beta\beta$ -Trimethyl- Δ^4 -nonen- δ -one, and its pyrazoline, A., 476.
 $\beta\delta\eta$ -Trimethyloctane, δ -bromo-, A., 844.
 $\delta\epsilon\zeta$ -Trimethyl- Δ^4 - n -octen- δ -ol, A., 847.
 1:1:8-Trimethylloxacarboeyanine iodide, (P.), B., 842.
O-Trimethylpeltogic acid, A., 985.
 ζ -Trimethylpentadecabetaïne, salts and derivatives, A., 479.
 2:2:5-Trimethylcyclopentanone-5-glyoxylic acid, ethyl ester, A., 752.
 1:9:3'-Trimethyl-1:2-cyclopentano-1:2:3:4-tetrahydrophenanthrene, A., 742.
 1:2:2-Trimethylcyclopentanoylmalonio acid, 3-cyano-, ethyl ester, A., 754.
 1:1:2-Trimethyl- Δ^2 -cyclopentene, 3-cyano-, A., 754.
 $\beta\gamma\gamma$ -Trimethyl- Δ^4 -pentenoic acid, methyl ester, A., 963.
 γ -2:2:3-Trimethyl- Δ^3 -cyclopentenylbutyric acid, β -hydroxy-, and its ethyl ester, A., 1246.
 1:2:2-Trimethylcyclopentyl phenyl ketone, 3-cyano-, and its derivatives, A., 754.
 2:10:10-Trimethylphenoxarsonium salts, A., 1257.
 2:4:6-Trimethylphenyl dibromomethyl ketone, 3:5-dinitro-, A., 1367.
 α -2:4:6-Trimethylphenylbutane- $\alpha\gamma$ -diol, A., 198.
 2-(2:4:6-Trimethylphenyl)-1:4-naphthaquinone, 3-bromo-2-(3:5-dinitro)-, A., 1126.
 Trimethylphloroglucinol, dehydrogenation of, A., 80.
 Trimethylpopulin, A., 69.
 3:4:5-Trimethyl-1:3-isopropylidene- α -fructose. See 3:4:5-Trimethyl-1:2-isopropylidene-*d*-sorbose.
 3:4:5-Trimethyl-1:2-isopropylidene-*l*-sorbose, A., 735.
 1:2:2-Trimethyl-3-propylcyclopentane-1:3-dicarboxylic acid, and its salts and anhydride, A., 625.
 6:7:9-Trimethyl-3-isopropyl-5:8:9:10-tetrahydro-1:4-naphthaquinone, A., 217.
 Trimethylpurpurins, chloro-, A., 347.
 2:5:6-Trimethylpyridine-3-carboxylic acid, and its ethyl ester, and its picrate and mercuric chloride compound, A., 1250.
 2:6:7-Trimethyl-5:6:7:8-tetrahydroquinoline, and its salts, A., 222.
 2:6:7-Trimethyl-5:6:7:8-tetrahydroquinoline-3-carboxylic acid, and its ethyl ester, A., 222.
 Trimethyltriallyltri-amine, and its mercury derivatives, A., 768.
 1:3:9-Trimethylisouric acid, 4-chloro-, A., 361.
 $\beta\gamma\gamma$ -Trimethylvaleraldehyde, and its semicarbazone, A., 963.
 $\beta\gamma\gamma$ -Trimethylvaleric acid, and its amide, and α -bromo-, methyl ester, A., 963.
 Trimethylxanthines, compounds of, with camphoric acid salts, (P.), B., 287.
 Tri- α -naphthylboron, electron affinity of, A., 1058.
 Trionadecylin, A., 960.
 Triolein, unimolecular films of, A., 442.
 Trioses, fermentation of, by yeast, A., 1418.
 (-)-Trioxindole, A., 356.
 Tripalmitin, unimolecular films of, A., 442.
 Triphenoxtellurium tetrabisulphate diamminodichloroplatosulphate, A., 100.
 Triphenyl phosphate, production of, B., 1036.
 thioantimonite, A., 1390.
 thioarsenite, A., 1390.
 9:9:10-Triphenylacenaphthene, 10-chloro-, and 10-hydroxy-, A., 858.
 Triphenylacetaldazine, A., 338.
 2:4:6-Triphenylacetophenone, and its benzylidene derivative, A., 493.
 Triphenylammonium perchlorate, A., 483.
 Triphenylanisylcyclopentadienones, A., 216.
 1:2:3-Triphenyl-4-anisylcyclopentane-1:2-diol, A., 216.
 2:4:6-Triphenylbenzene, 1-bromo-, A., 493.
 Triphenylbenzene compounds, steric hindrance in, A., 493.
 2:4:6-Triphenylbenzylidene, and its benzoate, A., 493.
 2:4:6-Triphenylbenzoic acid, and its methyl ester, A., 493.
 2:4:6-Triphenylbenzophenone, A., 493.
 Triphenylboron, electron affinity of, A., 1058.
 $\alpha\gamma\gamma$ -Triphenyl- α -*p*-chlorophenylallene, A., 1115.
 $\alpha\gamma\gamma$ -Triphenyl- α -*p*-chlorophenylpropyl alcohol, A., 1115.
 $\alpha\gamma\gamma$ -Triphenyl- α -*p*-chlorophenyl- Δ^4 -propylene, A., 1115.
 2:2:4-Triphenylchroman, A., 1377.
 2:3:5-Triphenyl-4-*p*-dimethylaminophenylcyclopentadienone, A., 216.
 Triphenyldiphenylethyl, electron affinity of, A., 1188.
 2:3:5-Triphenyl-4-*p*-diphenylcyclopentadienone, A., 216.
 Triphenylene. See 1:2:3:4-Dibenznaphthalene.
 $\beta\beta\beta$ -Triphenylethane, *aaa*-trichloro-, A., 77.
 Triphenylethylpyrrolone, crossed axial plane dispersion in, A., 810.
 Triphenylethylsilicane, nitration of, A., 1258.
 1:3:9-Triphenylfluorene, A., 493.
 1:3:9-Triphenylfluorene, A., 493.
 Triphenylfluorenonecarboxylic acid, and its derivatives, A., 213.
 2:3:5-Triphenylfurans, A., 352.
 Triphenylcyclohexanones, and their derivatives, A., 621.
 2:5:6-Triphenyl- Δ^5 -cyclohexenone, A., 622.
 $\alpha\alpha\gamma$ -Triphenyl- γ -(α -hydroxyphenyl)-*n*-propyl alcohol, A., 1377.
 $\gamma\epsilon\epsilon$ -Triphenyl- α -mesitylbuta- $\alpha\delta$ -dione, A., 494.
 Triphenylmethane, A., 74.
 parachor of, A., 432.
 Triphenylmethane, chloro- and fluoro-, additive compounds of, with boron halides, A., 459.
p-iodo-, A., 338.
 Triphenylmethanes, with linked benzene rings, A., 205.
 Triphenylmethanes, amino- and nitro-4:4'-dihydroxy-, and their derivatives, A., 208.
 hydroxy-, A., 208.
 Triphenylmethane dyes, structure of, A., 1059.
 Triphenylmethane dyes, manufacture of, (P.), B., 94, 219, 895.
 basic, water-soluble, manufacture of, (P.), B., 762.
 Triphenylmethane series, A., 857.
cis-2- β -Triphenylmethoxyethylcyclopentyl benzoate, A., 340.
 Triphenylmethyl derivatives, photochemistry and optical activity of, A., 857.
 synthesis of glycerides from, A., 1481.
 hyponitrite, decomposition of, A., 1114.
 6-Triphenylmethyl-3:4-anhydro- α -methylgalactoside 2-acetate, A., 964.
 $\alpha\zeta$ -Triphenylmethylbenzylidene-*d*-sorbitol diacetate, A., 1104.
 6-Triphenylmethyl-2:3-dimethyl- α -methylglucoside 4-*p*-toluenesulphonate, A., 964.
 2-Triphenylmethyldiphenyl, A., 78.
 6-Triphenylmethylgalactose, tritylation of, A., 199.
p-Triphenylmethylhydrazinobenzoic acid, ethyl ester, A., 78.
 2-Triphenylmethylhydrazino-2'-triphenylmethylazodiphenyl, 3-bromo-, and its decomposition, A., 78.
p-Triphenylmethylmethylaniline, and its acetyl derivative, A., 76.
 6-Triphenylmethyl- α -methylglucoside 2:3-diacetate, A., 847.
 2:3-dibenzoate 4-*p*-toluenesulphonate, A., 964.
 6-Triphenylmethyl- β -methylglucoside 4-acetate 2:3-di-*p*-toluenesulphonate, A., 68.
 Triphenylmethylmethyl- α -methylmannoside, A., 847.
 6-Triphenylmethylphenol- β -*d*-glucoside, salts of, A., 330.
 Triphenylmethyl β -phenylethyl ketone, A., 1125.
S-Triphenylmethylthioglycollic acid, and its ethyl ester, A., 1502.
 Triphenylmethylthymidine, A., 610.
 3-*p*-toluenesulphonate, A., 863.
 Triphenylmethylvinylacetylene, manufacture of, (P.), B., 347.
 $\alpha\epsilon\theta$ -Triphenylnonane, A., 740.
 $\alpha\gamma\epsilon$ -Triphenylpentane, A., 740.
 2:3:4-Triphenylcyclopentenolone, A., 204.
 Triphenylphosphine, reaction of, with organic disulphides, A., 339.
 Triphenylphosphine oxide, A., 988.
 $\alpha\beta\gamma$ -Triphenylpropane, $\alpha\gamma$ -diimino-, A., 619.
 Triphenylpyrrole, oximino-, action of hydroxylamine hydrochloride on, A., 763.
 2:3:5-Triphenylpyrrole, 1-hydroxy-, and its derivatives, A., 355.
 2:3:5-Triphenylpyrrolenine oxide, and its derivatives, A., 355.
 2:4:6-Triphenylpyrylium borofluoride, A., 1504.
 Triphenylrubene, fluorescence spectrum of, A., 1052.
 1:1:3'-Triphenylrubene-3-carboxylic acid, sodium salt, photo-oxidation of, A., 618.
 Triphenylsilicic, *tri-m*-amino-, and its trihydrochloride, A., 1258.
 Tripperidinoarsine triacetate and trinitrate, A., 1139.
 Tripropylbenzene, preparation of, and its derivatives, A., 203.
 1:2:4-Tripropylbenzene, A., 612.
 Tri-*p*-propylphenylmethyl chlorides and peroxides, A., 1115.
 2:4:6-Triisopropyltoluene, A., 739.
s-Tripridylbenzene, synthesis of, A., 360.
 Trisazo-dyes, production of, (P.), B., 397 941.
 black, manufacture of, (P.), B., 717.
 containing copper, (P.), B., 397.

- Tris-(1-benzoyl-2-naphthyl)guanidine**, A., 336.
Trisdimethylaminophosphine, and its compound with carbon disulphide, (P.), B., 468.
Tris- β -phenylethyltrimethyleneamine, A., 1385.
Trithio-orthogermanoformic acid, chloro-, tributyl ester, A., 327.
Trithio-orthosilicoformic acid, chloro-, tributyl ester, A., 326.
Tritium, concentration of, A., 11.
Tri-*p*-toluenesulphonamido-2:2'-ditolyl, A., 870.
2:3:4-Tri-*p*-toluenesulphonyl- β -methylglucoside, A., 1225.
Trityl phosphate, production of, B., 1036.
 protective coating from, (P.), B., 278.
Tri-*p*-tolyl thio-antimonate and -antimonite, A., 1390.
 thio-arsenate and -arsenite, A., 1390.
Tri-*p*-tolylmethyl chloride zincchloride and ferrichloride, A., 487.
Tri(tribenzylamino)chloroarsine, A., 1139.
4-Tritylphenyltrimethylammonium iodide, A., 76.
Tri-*o*- and -*p*-xenyl phosphates, A., 614.
Troeger's base, structure of, A., 630.
 formation of, A., 1118.
 "Trolhetta oil," use of, in superfatting of soaps, etc., B., 597.
Tropae, dihydroxy-, isolation of, from coca leaves, and its salts, A., 98.
Tropae alkaloids, synthesis of, under physiological conditions, A., 873.
Tropae oxide, and its picrate, A., 98.
Tropics, calcium therapy in diseases of, A., 1150.
Tropinone, synthesis of, under physiological conditions, A., 873.
Trout, young, effect of increased carbon dioxide and decreased oxygen on, A., 1013.
Truffles, imitation, from *Lactaria*, B., 826.
Trypaflavine, fluorescence spectrum of glycerol solutions of, A., 915.
Trypanocidal activity and chemical constitution, A., 502.
Trypanosoma equiperdum, glucose metabolism of, A., 125.
Trypanosomes, chemical tolerance and resistances to drugs of, A., 1030.
 action of arsenopyridine derivatives on, A., 125.
 in mammals, effect of low temperatures on, A., 1419.
 detection in, of gold, A., 257.
Trypanosomiasis, blood-sugar and -urea in, A., 1403.
 serum for vaccination against, (P.), B., 701.
 rat, chemotherapy of, A., 1030.
Trypsin, spreading of, A., 294.
 coagulation of oxalate plasma by, A., 771.
 effect of halogen salts on milk coagulation by, A., 785.
 influence of toluene on activity of, A., 404.
 action of, on polypeptides containing ψ -leucine, A., 1228.
 action of dyes and narcotics on, A., 784.
 kinase of amylase in preparations of, A., 249.
 fission of clupean by preparations of, A., 1279.
 in stomach, A., 1025.
 detection of enzymes of type of, A., 784.
 determination of, nephelometrically, A., 123.
Trypsin-kinase, proteolytic and rennin-like activity of, A., 252.
Trypsinogen, preparation of, A., 1417.
 activation of, by enterokinase, A., 660.
 crystalline, isolation of, and its conversion into crystalline trypsin, A., 252.
Tryptamine, synthesis of tetrahydroharman and its derivatives from, A., 224.
Tryptophan, synthesis of, A., 1379.
 oxidation reactions related to, A., 499.
 action of nitrous acid on, A., 1132.
 growth-stimulating properties of, A., 408.
 indole derivatives as supplement for, in diet, A., 1405.
 break-down of, by suspensions of *Bacillus coli*, A., 663.
 reaction for, A., 639.
 detection of, colorimetrically, A., 370.
 determination of, A., 877.
L-Tryptophan, solubility of, in water, A., 695.
Tryptophanase, action of, on tryptophan and indole, A., 1163.
Tschewkinite, A., 842.
Tsugaresinol, A., 1126.
 identity of sulphite liquor lactone with, A., 83.
 from sulphite waste, A., 623, 754.
Tsun Chü, vitamin-C content of, A., 262.
Tubers, edible, nutrition with, A., 114.
Tuberculin, purification of, A., 408.
 properties of, extracted from bacteria, A., 1170.
 effect of, on blood-cholesterol, A., 408.
 on residual nitrogen metabolism, A., 1011.
 standardised, A., 889.
 β -Tuberculin, preparation and biological properties of, A., 889.
Tuberculosis, physics of, A., 1403.
 chemotherapy of, A., 1528.
 action of anti-sera of, on tuberculin, A., 126.
 blood-glutathione in, A., 519.
 blood-lipase in, A., 238.
 calcium in, A., 651.
 carbohydrate metabolism in, A., 386.
 metabolism of nitrogenous substances in, A., 386.
 non-protein-nitrogen of serum in, A., 1011.
 oxalic acid metabolism in, A., 386.
 chemistry of sputum in, A., 1528.
 use of sera precipitated with hydrochloric acid in fixation reaction for, A., 1003.
 allergy and immunity in, A., 889.
 vigantol therapy in, A., 519.
 Vernes' resorcinol reaction in, A., 776.
 exudative and proliferative, A., 386.
 incipient infantile, mineral metabolism in, A., 386.
 pulmonary, basal metabolism in, A., 1403.
 calcium and potassium in blood in, A., 238.
 action of intravenously-administered lecithin on, A., 386.
 in thorax, preparation for treatment of, (P.), B., 287.
 urinary, treatment of, with purified methylene-blue, A., 1403.
 determination of proteins of blood-serum in, A., 386.
Tubocurare, A., 1138.
Tubocurarine, A., 655.
 chloride, A., 1138.
Tufa, chironomide, A., 956.
Tumours, growth-inhibiting factor for, from human connective tissue, A., 886.
 metabolism in, A., 1013.
 effect of oxidation-reduction potential dyes on, A., 1401.
Tumours, effect of radium rays on carbohydrate metabolism of, A., 1414.
 co-enzyme of glycolysis from, A., 1008.
 action of extracts of, on hexose diphosphate, A., 1148.
 production of lactic acid in, A., 1526.
 action of ascorbic acid on, A., 236, 1526.
 effect of ascorboferrin on, A., 649.
 effect of colchicine on, A., 515.
 effect of iodoacetic acid, lactic acid, and radiation on, A., 1008.
 action of iron-vitamin-C preparations on, A., 1401.
 lead compounds used in therapy of, A., 1021.
 deposition of magnesium compounds in, A., 649.
 effect of methylene-blue on, A., 515.
 chicken, causative agent of, A., 885.
 effects of extracts of, on yeast-nucleic acid, A., 382.
 inoculation, effect of anterior pituitary and pineal hormones on growth of, A., 886.
 mouse, therapy of, A., 1008.
 effect of vitamins-A and -D on frequency of, A., 236.
 neoplastic, fibrinogen content of blood in, A., 1526.
 in man, polypeptidemia index in, A., 1526.
 ovarian, carotene in, A., 1400.
 rat's, histochemistry of organs bearing, A., 514.
 transplantable, effect of X-rays on growth and metabolism of, A., 1525.
 uterine, production of, by ovarian hormone, A., 649.
 vegetable, chemistry of, A., 269.
Tumour extracts, enzymes in, A., 782.
 acting on hexosephosphates, A., 1279.
Tuna, oils for canning of, B., 122.
Tung oil, production of, in the Empire, B., 508.
 drying of, B., 912.
 crystallisation, frosting, and gelation of, B., 732.
 gelling and de-gelling of, B., 1149.
 polymerisation of, B., 559.
 and its mixtures with linseed oil, thermochemistry of, B., 732.
 defects in films of, B., 239.
 iodine value of, B., 508.
 American, composition of, B., 639.
 distinction between oiticica oil and, A., 1350.
 detection of impurities in, B., 318.
Tung trees, correction of bronzing of, with zinc sulphate, B., 603.
Tungsten, hyperfine structure and isotopic constitution of, A., 3.
 occurrence of, in oxidised lead deposits, A., 60.
 geology of Castle-an-Dinas mine of, A., 1344.
 spectrum of, A., 137.
 Zeeman effect in, A., 676.
 isotope effect in arc spectrum of, A., 1292.
 L X-ray spectrum of, A., 676.
 L-series X-ray absorption spectrum of, A., 272.
 anodic behaviour of, in potassium hydroxide solutions, A., 171.
 influence of light on anodic polarisation of, A., 937.
 oxygen content and potential of valve layers of, A., 430.
 p.d. at contact of, with barium, A., 1061.

- Tungsten**, surface ionisation of potassium iodide on, A., 1303.
 self-ionisation of sodium and caesium at glowing surfaces of, A., 4.
 heat of vaporisation of electrons for, A., 801.
 ratio of thermal coefficient of expansion to specific heat at constant pressure of, A., 1464.
 adsorption by, of hydrogen, A., 293, 1315.
 of oxygen, A., 1316.
 decomposition of deuterammonia on, A., 710.
 clean and oxygenated, contact p.d. between, A., 1446.
 ductile, B., 232, 501.
 thoriated, activation of, A., 557.
- Tungsten alloys**, hard, manufacture of, (P.), B., 157.
 with iron and nickel, hardening of, by heat, B., 360.
 with molybdenum, electron emission of, A., 273.
- Tungsten compounds**, colloidal, production of plastic masses of, (P.), B., 900.
- Tungsten alkali chlorides**, crystal structure of, A., 812.
 carbide, hard alloys of, (P.), B., 810.
 cemented, impact abrasion hardness of, B., 1094.
 fluoride, low temperature density of, in carbon tetrafluoride, A., 437.
 nitride, formation of layers of, B., 1052.
- Tungstic oxide**, condensation of, with boric acid, A., 166.
 sols, A., 296.
 reaction of, with carbon in chlorine, A., 834.
 doping of, (P.), B., 991.
- meta-Tungstic acid**, caesium salt, crystal structure of, A., 920.
- Tungstates**, detection of, A., 316.
- Tungstate ions**, effect of p_H on, A., 1322.
- Tungsten organic compounds** :—
 Tungsten hexacarbonyl, and its organic derivatives, A., 314.
 crystal structure of, A., 686.
- Tungsten determination and separation** :—
 determination of, A., 951.
 volumetrically, A., 56.
 separation of, from niobium, tantalum, titanium, and zirconium, A., 1217.
- Tungsten ores**, treatment of, B., 104.
 flotation of, (P.), B., 505.
 analysis of, B., 997.
- Tungsten wire**, chromium-plating of, (P.), B., 506.
 thin, preparation of, by sputtering of thick wire in gas discharge, A., 321.
- Tunny liver oil**, refining of, (P.), B., 1003.
- Turbines**, nickel-iron alloys for blades of, (P.), B., 314.
 regulation of evaporators for, (P.), B., 610.
- Turkeys**, nutrition of, A., 391.
 effect of vitamin-A deficiency on, A., 543.
 vitamin-D requirements of chicks, pheasants, and, A., 1287.
- Turnbull's blue**, absorption spectrum and constitution of, A., 806.
- Turnips**, effect of *Rhizoctonia solani* on growth of, A., 898.
 antiscorbutic properties of, A., 1287.
- Turpentine**, reaction between stannic chloride and, B., 734.
 analysis of liniment of, B., 1117.
 from fir scrape, B., 1054.
 American wood, composition of, B., 1054.
- Turpentine**, oxidised, production of, and its use in lacquers, B., 31.
 from *Pinus silvestris*, oxidisability of, B., 31.
- Turpentine oil**, from Dutch Indies, packing of, B., 464.
 German balsam, B., 814.
 Russian, composition of, B., 160.
- Turquoise**, X-ray structure of, A., 842.
- Turtle oil**, physical and chemical characteristics of, B., 1102.
- Twitchell's reagent**, A., 488; B., 276, 317.
- Tylophora asthmatica**, alkaloids of, A., 1433.
- Tylophorine**, A., 1433.
- Tylophorinine**, A., 1433.
- Tyndall scattering** in colloids, depolarisation of, A., 821.
- Type-metal**, B., 152, 552; (P.), B., 505.
 molten, treatment of metal parts to prevent adhesion of, (P.), B., 461.
 surface tension of, B., 64.
 corrosion of, by beech wood, B., 770.
 electroplating of, with chromium, (P.), B., 811.
 smelting of ashes from, B., 104.
- Typewriters**, dyes for ribbons for, (P.), B., 15.
- Typhoid fever**, blood-cholesterol in, A., 1011.
 effect of gonadotropic hormone in cases of, A., 1011.
- Tyramine**, absorption spectrum of, A., 563.
 effect of p_H on, A., 896.
 spectrography of action of tyrosinase on, A., 897.
 flavianate, A., 639.
 production of, in kidneys, A., 1153.
- Tyres**, apparatus for vulcanisation of, (P.), B., 83.
 pneumatic, puncture-proofing composition for, (P.), B., 1104.
 rubber, non-adhesive liner for, B., 468.
- Tyrosinase**, action of, on tyrosine, tyramine, and adrenaline, A., 896.
- Tyrosine**, and diiodo-, absorption spectra of, A., 563.
 effect of p_H on, A., 896.
 substitution in, A., 1122.
 combination of, with casein and ovalbumin, A., 506.
 compounds of, with polysaccharides, A., 1390.
 separation of, from cystine, A., 877.
 3-mercurihydroxide, A., 1122.
 action of tyrosinase on, in presence of L-ascorbic acid, A., 1537.
 spectrography of, A., 896.
 content of, in serum proteins, A., 1001.
 fate of, in body after injection, A., 890.
 effect of, on gaseous metabolism, A., 1275.
 on thyroid, A., 1269.
- Tyrosine**, dihalogeno-derivatives, solubilities, dissociation constants, and thermodynamics of, A., 1076.
 diiodo-, ethyl ester, and nitro-, methyl ester and its hydrochloride, A., 1122.
 effect of, and of potassium iodide on basal metabolism, A., 781.
 on myelogenous leucemia, A., 887.
 in foetus and new-born, A., 772.
- dl- and l-Tyrosines**, oxidation of, by kidneys and liver of animals, A., 1407.
- Tyrosineamide**, diiodo-, and 3-nitro-, A., 1122.
- Tyrosinuria**, human, A., 648.
- l-Tyrosyl-d- and -dl-serines**, A., 1014.
- Tysonite**, paramagnetic rotation of, A., 149.
- U.**
- Ucuhuba fat**, B., 317.
- Ulcers**, peptic, acid-base equilibrium and urinary acidity in, A., 385.
 etiology of, A., 1271.
- Ulex europaeus*, alkaloids of, A., 365.
- Ultracentrifuge**, A., 59, 1342.
 adaption of, A., 724.
- Ultrafilter** for colloids, A., 1071.
- Ultrafiltration** with cellophane membranes, A., 1342.
 fractional, A., 1099, 1342, 1477.
- Ultramarine**, production of, from spent sulphite liquors, B., 32.
 substitution and decomposition of alkalis in, A., 50.
 composition of silicate in, A., 1470.
 silicates and sulphur in, A., 1462.
 compound of, with sulphur, A., 1204.
- Ultramarine-blue**, chemistry of, B., 913.
 thermal degradation of sulphur in, A., 1333.
- Ultra-rays**. See under Rays.
- Ultra-viruses**, nature of, A., 1420.
- Ultrasonic waves**. See under Waves.
- Umbelliferone**, in Persian ammoniacum gum, B., 573.
- Umbelliferone-3-aldehyde**, and its phenylhydrazone and sodium derivative, A., 868.
- Umbellulone**, pharmacological and bactericidal action of, A., 780.
- Umbers**, determination in, of calcium oxide, B., 366, 465.
- Uncertainty principle**, and zero-point energy of harmonic oscillators, A., 1298.
- Δ^a -Undecenoamides**, A., 1357.
- isoUndecenoic acid**, addition of hydrogen bromide to, A., 1223.
- Undecenoic acids**, addition of hydrogen bromide to, A., 324.
- Δ^a -Undecenonitriles**, A., 1357.
- Undecodilactone**, κ -hydroxy-, A., 1351.
- Undecolactone**, κ -hydroxy-, A., 1351.
- Undecotrilactone**, κ -hydroxy-, A., 1351.
- Undecyl chloride**, A., 474.
- α -Undecyl- γ -butyrolactone**, A., 474.
- Undecylmalonic acid**, diethyl ester, A., 474.
- Unsaturated compounds**, catalytic hydrogenation of, A., 175.
 with selenium, A., 829.
 polymerisation of, (P.), B., 139.
 reactions of, A., 205, 1488.
- Upholstery**, treatment of stuffing for, (P.), B., 1088.
 distinguishing new and secondhand cotton fillings for, B., 896.
- Uracil**, preparation of, A., 629.
 oxidation of, A., 358.
 derivatives, preparation of, A., 358.
- Uracyl-5-methylamine**, and its salts, A., 991.
- Uræmia**, lipæmia in, A., 1269.
 experimental, action of magnesium in, A., 1528.
- Uranine**, extinction of fluorescence of, by potassium iodide, A., 915.
 action of pathological and therapeutic products on fluorescence of, A., 649.
 effect of ordinary and *geno*-alkaloids on fluorescence of solutions of, A., 1446.
 action of sera on fluorescence of solutions of, A., 12.
- Uraninite (pitchblende)** in Bedford cyrtolite, A., 954.
 from Great Bear Lake, Canada, thorium content of, A., 469.
 from Katanga, composition and age of, A., 191.
 age of, in pegmatites of N. Carclia, A., 841.

Uranium, unit cell structure of, A., 17.
isotopes of, A., 1048.
recovery of, as by-product from radium, B., 856.
L X-ray spectrum of, A., 676.
constancy of ratio of actinium to, in minerals, A., 322.
transformation of, by neutrons, A., 278, 678.
transformation products of, A., 1050.
use of, in organic syntheses, A., 1357, 1487.

Uranium salts, determination in, of vanadium, B., 60.

Uranium oxide, preparation of, by electrolysis, A., 589.
electrolytic preparation of thin layers of, A., 1330.

Uranyl salts, fluorescence of, and its application in analysis, A., 56.
magneto-optical rotation of, A., 1447.
photochemical reaction of, with phosphorous and hypophosphorous acids, A., 177.

Uranyl nitrate, anomalous magnetic rotation of, A., 684.
poisoning by. See under Poisoning.

Uranium determination :—
determination of, in presence of iron, iodometrically, A., 951.
determination of, of vanadium, A., 1216.

Uranium-X, γ -rays from, A., 1048.

Uranium-X₁, distribution of, between crystals and solution of uranium sulphate, A., 27.

Uranus, ozone in atmosphere of, A., 424.

Urea (carbamide), decomposition of, in soils, B., 602.
formation of, in the body, A., 779.
in liver, A., 242, 1152.
in human placenta, A., 1265.
effect of temperature on bacterial ammonification of, A., 1167.
conversion of guanidine into, by moulds, A., 254.
significance of low concentration of, in blood, A., 1010.
content of, in blood and cerebrospinal fluid, A., 641.
perfusion of intestines with, A., 112.
in isolated frog's kidneys, A., 1015.
in urine in relation to renal function, A., 106.
ratio of, as measure of renal function, A., 641.
relation of clearance of, to renal blood-flow, A., 774.
influence of protein intake on clearance of, in man, A., 524.
clearance test of, in children, A., 1402.
relative anaesthetic action of derivatives of, A., 118.
determination of, A., 1552.
by Nessler colorimetry, A., 1044.
in blood-serum, A., 880.
See also Carbamide.

Urease, crystal structure of, A., 18.
ultrafiltration of, A., 252, 1025, 1163.
after partial digestion by trypsin, A., 1164.
in stomach, A., 1152.

Urethane, viscosity of mixtures of, with carbamide, A., 693.
equilibrium of, with antipyrine and carbamide, A., 448.
with antipyrine and phenacetin, A., 704.
with menthol and phenacetin, A., 1078.
determination of, in presence of amidopyrine, theobromine, caffeine derivatives, etc., B., 1022.

Urethanes, A., 486.
action of thionyl chloride on, A., 854, 1359.

Uric acid, attempted synthesis of, from nine-membered cycloids, A., 360.
resynthesis of, by uricase, A., 405.
oxidation-reduction potential of xanthine and, A., 170.
thermal data for, A., 1324.
solubility of, in urine, A., 1525.
and its acetyl and methyl derivatives, chlorination of, A., 360.
autoxidation of, A., 360.
effect of viscosity on velocity of oxidation of, in presence of uricase, A., 405.
compound for lowering physiological level of, (P.), B., 974.
synthesis of, in birds, A., 1153.
in pigeons, A., 1407.
content of, in blood, A., 514.
in liver, and its elimination, A., 528.
in urine, A., 774.
effect of exercise on excretion of, A., 1007.
determination of, in blood. See under Blood.
in mixed excreta of birds, A., 648.
in urine. See under Urine.

Uric acid glycols. See 4:5-Dihydrouric acids, 4:5-dihydroxy-.

Uricase, A., 405.
properties of, A., 123.

Urine, effect of carbon dioxide and oxygen tension on formation of, A., 1148.
acid-base balance of, as result of gastric secretion, A., 378.
effect of histamine on, A., 512.
acidity and physical properties of, A., 513.
effect of fruit juices on acidity of, A., 1524.
diet and reaction of, A., 380.
surface tension of, during menstruation, A., 385.
concentration and dilution of, A., 380.
daily fluctuations in p_H of, A., 380.
influence of bile acids on p_H of, A., 111.
effect of magnesium halides on p_H of, A., 107.
effect of clamping large arteries on, A., 1400.
daily variation of excretion in, A., 113.
acidosis-producing substance of, A., 1268.
adrenaline in, A., 539.
ammonia in, after introduction of urease, A., 508.
effect of bile acids on excretion of, A., 1158.
ammonia and ketones in, in endogenous protein metabolism, A., 891.
excretion of antibodies through, A., 231.
ascorbic acid and thiosulphate in, A., 262.
calcium debit in, and polyuria from water ingestion, A., 774.
excretion of cocaine in, A., 1525.
excretion of copper in, A., 235.
creatinine in, as measure of glomerular filtration, A., 106.
in hypothyroidism, A., 650.
excretion of folliculin in, A., 128.
extraction of glycoeyamine in, A., 379.
glycogen in, A., 106.
growth factors in, and their action on micro-organisms, A., 786.
hormones in, after oophorectomy, A., 542.
melanophoric hormone in, A., 791.
protective hormone in, A., 1268.
testicular hormone from, A., 260.

Urine, effect of thyrotropic hormone on constituents of, A., 790.
iodine in, A., 410.
in relation to basal metabolism, A., 775.
after ingestion as iodide, thyroxine, and di-iodotyrosine, A., 115.
lactic acid in, during injection of glucose, A., 778.
effect of muscular work on lipase in, A., 110.
lyochromes in, A., 774.
gonococcal action of mallophen in, A., 1170.
methylglyoxal in, in vitamin-B₁ deficiency, A., 1267.
pentose in, A., 106.
phosphatase in, A., 534, 1164, 1268, 1279.
relation of pigments of, to blood pigments, A., 103.
effect of lead poisoning on porphyrins in, A., 531.
centrifugalisation of proteins of, A., 885.
effect of diet on volatile reducing substances in, A., 1268.
substance from, with properties of "substance P", A., 234.
sugar in, effect on, of administration of glucose, A., 110.
neutral sulphur of, A., 380.
post-operative sulphur in, A., 648.
surface-active substances in, A., 1524.
thiosulphate and vitamin-C in, A., 1176.
urea in, in relation to renal function, A., 106.
solubility of uric acid in, A., 1525.
uric acid and urochrome in, A., 774.
vitamin-C in, A., 131, 546.
after injection, A., 669.
vitamin-C content and reducing power of, A., 793.
reflector effect on water and sodium chloride in, A., 1399.
action of anterior pituitary-like substance of, on metabolism of dogs, A., 1171.
administration of oestrogenic substances of, A., 1285.
effect of sodium chloride deficiency on, A., 892.
examination of, in renal disorders, A., 238.
constituents in, producing hyperglycaemia, A., 259.
treatment of infections in, with mandelic acid, A., 887.
silver nitrate reaction with, A., 513.
animal and human, comparison of, A., 1147.
of castrates, gonadotropic anterior pituitary factor in, A., 1524.
diazo-, A., 1150.
dog's, phenolsulphonates in, A., 245.
reducing substances in, A., 513.
elephant's, organic constituents of, A., 1147.
glomerular, composition of, A., 235, 1267.
of frogs and *Necturus*, chloride in, A., 235.
of *Necturus*, determination in, of p_H , A., 1218.
gonadotropic, effects of, and of anterior pituitary extracts, A., 541.
human, volatile amines of, A., 1007.
depressor substance in, A., 895.
sucrose, xylose, urea, and inorganic sulphates in, A., 106.
thyrotropic substances in, A., 1007.
male, oestrogenic hormone in, A., 1173.

Urine, human, pregnancy, hydrolysis of, for determination of oestrone and oestriol, A., 1033.
 new agent from, A., 1034.
 infant's, ammonia, urea, and pH of, A., 1267.
 of inhabitants of Sweden, vitamin-C in, A., 1286.
 male, masculinising action of, A., 791.
 of men, androsterone from, A., 413.
 in phosphorus poisoning, A., 1161.
 of elderly men, prolan in, A., 412.
 of the menopause and of pregnancy, luteinising capacity of, A., 1174.
 pregnancy, preparation of gonadotropic extracts of, A., 128.
 isolation of *allopregnanediol* from, A., 210, 341.
 preoperative administration of, A., 1425.
 administration of, to immature female rats, A., 1425.
 effect of, in gonadectomy, A., 791.
 growth effect with heated, A., 1289.
 effect of injections of, on mineral content of blood, A., 542.
 origin of histidine in, A., 1525.
 in pregnancy and lactation, glucose and lactose in, A., 1402.
 protein-free, biuret-like reaction of, A., 1007.
 containing pyridium, false Ehrlich reaction with, A., 1156.
 rabbit's, ammonium and calcium excretion in, A., 885.
 in scurvy, ascorbic and dehydroascorbic acid in, A., 1176.
 of non-pregnant women, determination in, of oestrin, colorimetrically, A., 1034.

Urine analysis:—
 analysis of, A., 1006.
 interpretation of, in diagnosis, A., 648.
 detection in, of adrenaline, A., 1173.
 of barbituric acid derivatives, A., 118.
 of bile-pigments by methylene-blue, A., 1268.
 of bilirubin, A., 235.
 of calliercin, A., 257.
 of defence enzymes, A., 1268.
 of glucose and proteins, A., 1147.
 of nitrites, A., 513.
 of proteins, A., 884.
 detection and determination in, of atebirin, A., 655.
 of porphyrin, A., 379.
 determination in, of acetone, A., 513.
 of albumin and globulin, A., 508.
 of "free" ammonia, A., 1267.
 of ascorbic acid, A., 1430.
 of chlorides with mercuric nitrate, A., 1399.
 of creatinine, A., 1142.
 of diethyl sulphide, iodometrically, A., 380.
 of ethyl alcohol, A., 116.
 of galactose, A., 270.
 of glucose, A., 106, 1525.
 of indican, A., 648.
 of iodine, A., 238.
 of ketones, A., 1268.
 of lead, A., 399, 1525.
 of magnesium, A., 380, 1473.
 of nitrate-nitrite-nitrogen in, A., 774.
 of phenols, A., 648.
 of sulphur, A., 1267.
 of sugar, A., 1006.
 of thiosulphates, A., 1006.
 of tyrosine index of polypeptides, A., 379.

Urine analysis:—
 determination in, of urea, A., 1525.
 with photo-electric densitometer, A., 1399.
 of uric acid, A., 1268.
 of vitamin-C, A., 417.

Urobilin, compounds with condensed pyrrole nuclei resembling, A., 1381.
 excretion of, A., 107.
 in children, and its relation to blood formation and destruction, A., 512.
 determination of, A., 379.

Urobilinuria, A., 1156.

Urochrome in urine, A., 774.

Uroerythrin, A., 1524.

Uronic acid, decomposition of substances containing, A., 753.
 relation between furfuraldehyde and, in cell-walls of plants, A., 1042.

Ursolic acid, metallic salts, A., 624.

Urtite, production of aluminium oxide from, B., 20.

Urushiol, oxidation and polymerisation of, A., 1502.
 determination of, in lacquers, A., 1502; B., 734, 960.

Ustilago maidis. See Ergot, corn.

Ustulina vulgaris, effect of, on wood, A., 1043.

Uterus, growth of, from injection of ovarian hormone, A., 542.
 movements of, A., 1426.
 mineral elements in bladder, muscle, and, A., 511.
 metaplasia of epithelium of, produced by oestrin, A., 259.
 reactivity of, to pre-sacral nerve stimulation and to drugs, A., 1425.
 effect of oestrin on, A., 1425.
 guinea-pig's, effect of histamine on, A., 780.
 human, effect of ergot preparations on, A., 872.
 rabbit's, effect of corpus luteum on activity of, A., 666.
 effect of oestrin on, A., 1173.
 action of opium alkaloids on, A., 1156.
 utilisation of oxygen by, A., 888.
 action of strychnine and uterine tonics on, A., 1410.

Uzargenin, structure of, A., 218.
 derivatives of lactones from, A., 396.

V.

Vaccines, complement fixation by elementary bodies and extracts of, A., 644.

Vaccine lymph. See under Lymph.

Vaccine virus, purification of, A., 409.
 preparation of specific substance from, A., 788.

Vacciniin, constitution of, A., 199.

Vaccinium vitis idææ, arbutin content of, A., 421.

Vacua, gauge for, A., 321.
 regulator for, A., 321.
 high, production of, A., 59; B., 177; (P.), B., 388.
 production of ions in, A., 425.
 cut-offs for, A., 189.
 conducting films in, A., 1340.
 pump for, (P.), B., 258.

Vacuum tubes, a.c. relay for, A., 1097.
 use of, in measurements, A., 723.

Vacuum vessels, current lead-in for, A., 1097.
 Dewar, use in calorimetry, A., 924.

Valency, A., 917.
 theory of, A., 431, 810.
 electronic theory of, A., 431, 1057.
 and organic chemistry, A., 843.
 pair linking theory of, A., 431.
 definition of, A., 685.
 and spectroscopy, A., 432.
 maximum, and atomic structure, A., 1058.

n-Valeraldehyde *p*-nitrobenzoylhydrazones, A., 1259.
o-tolylsemicarbazone, A., 1259.

Valeraldehyde, γ -*di*hydroxy-, A., 607.

*iso*Valeraldehyde, photochemical decomposition of, A., 1468.

Valerian, 2-acetylpyrrole in official stabilised, A., 551.

Valeric acid, menthyl ester, production and properties of, B., 78.
a-naphthyl ester, A., 484.
 Valeric acid, δ -amino-, and its derivatives, reactions of, A., 1356.
*iso*Valeric acid, adsorption of, on talc, A., 820.
 distribution of, between two liquid phases, A., 577.

L(—)-*iso*Valeric acid, α -amino-, acetyl derivative, ethyl ester, A., 736.

Valeric-hydrazide, δ -hydroxy-, A., 1480.

5-*iso*Valeryl-1-methyl-4-isopropylbenzene, 2-hydroxy-, A., 1369.

2- and 4-Valeryl- α -naphthols, A., 485.

Validol, testing of, B., 828.

Valine, configuration of, A., 736.
 metabolism of, A., 746.

Valine, hydroxy-, non-existence of, in hydrolysis products of zein, A., 369.

dl-Valine, conductivity of aqueous solutions of, A., 584.
 specific heat of solutions of, A., 304.

Valinols, and their derivatives, A., 736.

Valonia, osmometer from cells of, A., 674.
 relation between protoplasm and sap in, A., 1431.
 penetration of anions in, A., 552.

Valves, bimetallic element for, (P.), B., 314.
 steel, for high-temperature work, (P.), B., 66.
 thermionic, manufacture of, (P.), B., 958.
 alloys for use in, (P.), B., 66.
 grids for, (P.), B., 415.
 grid electrodes for, (P.), B., 1001.
 cementing materials for caps of, (P.), B., 775.
 press cap and lead-in wire for, (P.), B., 908.
 oxygen content and potential of layers of niobium, tantalum, and tungsten in, A., 430.

Vanadium, occurrence of, in oxidised lead deposits, A., 60.
 in petroleum, B., 391.
 pure, preparation of, A., 181, 715.
 production of, in the Urals, B., 191.
 extraction of, from basic open-hearth slags, B., 409.
 recovery of, (P.), B., 157.
 from pig iron, (P.), B., 503.
 from Ural titanomagnetite basic martensite slag, B., 723.
 uses of, B., 501.
 constitution of complex acids of, A., 34.
 effect of, on plant growth, B., 967.
 action of, on cultivated plants, A., 553.

Vanadium compounds, tervalent, A., 313.

Vanadium oxide, band spectrum of, A., 805.
*tet*roxide, equilibrium of, with carbon monoxide, A., 35.

- Vanadium pentoxide**, adsorption by, of sulphurous acid, A., 28.
 crystals, optical and electrical properties of, A., 1310.
 sols, viscosimetry and structure of, A., 700.
 influence of carrier on contact properties of, B., 146.
 oxides, reduction of, by carbon and carbon monoxide, A., 313.
Vanadous sulphate as reducing agent, A., 838.
Vanadyl nitrate, decomposition of, A., 174.
Vanadates, pharmacology of, A., 1413.
Pervanadates, A., 313.
Polyvanadates, in alkaline solution, A., 1322.
Vanadium organic compounds, A., 627.
Vanadium detection and determination:—
 detection of, with Group III metals, A., 56.
 determination of, in the field, A., 1474.
 gravimetrically, A., 1339.
 with ammonium benzoate, A., 319, 1095.
 with 8-hydroxyquinoline, A., 464.
 volumetrically, with potassium iodate, A., 56.
 in complex salts, A., 319.
 in presence of iron, iodometrically, A., 951.
 in iron and alloy steel, volumetrically, B., 594.
 in cast iron and alloy steel, B., 359.
 and titanium, in cast iron, B., 358.
 in steel, potentiometrically, B., 63.
 in high-speed steel, photometrically, B., 854.
 in steel, volumetrically, with diphenylamine, B., 64.
 in uranium preparations, A., 1216; B., 60.
Vanadium ores, treatment of, (P.), B., 236.
Vanilla extracts, standard for, B., 251.
Vanillin, preparation of, from sawdust and sulphite liquor, A., 750.
 synthesis of, B., 1067.
 Raman spectrum of, A., 807.
 lead number of, B., 123.
 ozonisation of, A., 1328.
 condensation of, with *o*-phenylenediamine, A., 358.
 condensation product of, with barbituric acid, A., 759.
 condensation of substitution products of, with methylene derivatives, A., 1367.
 mercury ethyl salt, A., 202.
 derivatives, reactivity and Raman spectra of, A., 1446.
 m-nitrobenzhydrazide, A., 743.
 for ice cream, B., 1161.
 detection of, A., 1474.
 detection of methyl isopropyl and amyl alcohols in ethyl alcohol with, B., 137.
Vanillin, bromo- and chloro-, condensation of, with acetophenone, A., 214.
 5-iodo-, A., 1237.
Vanillin- β -D-galactoside, and its tetra-acetyl derivative, A., 965.
Vanillylaminomethylanthydrocotarnine, and its dihydrochloride, A., 767.
Vanillylideneacetophenones, *mono*-, *di*- and *tri*-bromo- and -chloro-, A., 214.
Vanillylideneaminomethylanthydrocotarnine, A., 767.
9-Vanillylidenefluorene, 2-nitro-, and its benzoyl derivative, A., 1488.
Vaporisation, A., 691.
Vapours, pressure drums for, (P.), B., 85.
 cooler condensers for mixtures of gases and, B., 577.
 depolarisation of light scattering in, A., 1301.
 refraction and dispersion of, A., 13.
 dipole moments of, A., 1056.
 dielectric constants of, A., 916, 1304.
 determination of moment of passage of, through sorbents, A., 1098.
 recovery of liquefiable constituents from, (P.), B., 338.
 corrosive, condensation of, (P.), B., 579.
 mixed, osmotic pressures of, A., 1317.
 organic, magnetic properties of, A., 14.
 heat transfer between metal tubes and, B., 929.
Vapour density, micro-determination of, A., 59.
Vapour pressure, determination of, A., 22.
 relation of, to latent heat and viscosity, A., 575.
 effect of temperature on, above critical point, A., 157.
 lowering of, and osmotic pressure, A., 579.
 of hydrocarbons, A., 157.
 of small particles, A., 925.
 of unstable salt hydrates, A., 934.
 of solutions, determination of, by dew-point method, A., 24.
 of aqueous solutions, A., 694.
 of volatile liquids, apparatus for measurement of, B., 49.
Varanus salvator. See Lizards.
Varnishes, classification of, B., 1102.
 manufacture of, (P.), B., 466, 511.
 adaptation of laboratory processes in, B., 366.
 removal of fumes in, B., 109.
 from cellulose esters and ethers, (P.), B., 1056.
 anti-oxidants and anti-skinning agents for, B., 366.
 colour-binding media for, (P.), B., 735.
 natural gums for, B., 860.
 refining of linseed oil for, B., 813.
 use of petroleum derivatives in, B., 464.
 use of petroleum jelly in, B., 366.
 alkyd resins for, (P.), B., 278.
 use of esterified copal resins in, B., 510.
 phenol-formaldehyde resins for, B., 815.
 phenolic resins for, B., 69, 366.
 synthetic resins for, B., 161.
 use of wood rosin in, B., 815.
 dissolving of rubber for, (P.), B., 916.
 mixed synthetic oil product for, (P.), B., 959.
 driers for, (P.), B., 366.
 driers and alkyds for, B., 1055.
 drying oils for, B., 1055.
 from acid petroleum sludge, B., 1030.
 soluble driers for, (P.), B., 1004.
 dispersion of pigments in, B., 32.
 livering of, B., 32.
 removers for, (P.), B., 960.
 inflammability of gases from heating of, B., 1151.
 acidity in, B., 860.
 coating of metal wires with, (P.), B., 910.
 coating of porous materials with, (P.), B., 1153.
 coating of printed matter with, (P.), B., 511.
 coating of wires, etc., with, (P.), B., 684.
 films, use of ozone for drying of, B., 913.
 apparatus for measurement of adhesion of, B., 69.
 penetration of paper by, B., 1040.
Varnishes, for use in aeronautics, B., 238.
 fire prevention and control in factories for, B., 239.
 microscopy of, B., 1151.
 apparatus for testing of, (P.), B., 1004.
 with photo-electric cells, B., 510.
 testing and control of, B., 194.
 determination of durability of, B., 960, 1004.
 alkyd resin, coating of flexible sheet materials with, (P.), B., 562.
 wrinkle-finish, (P.), B., 815.
 American, use of phthalic acid resins in, B., 239.
 "crackle" film, production of, (P.), B., 367.
 crystallising, (P.), B., 161.
 French, compatibility of, with nitro-cellulose solutions, B., 599.
 lithograph, manufacture of, in atmosphere of carbon dioxide, B., 598.
 natural resin, B., 510.
 oil, manufacture of, (P.), B., 195.
 use of Brazil jutahicica resin in, B., 1103.
 phenolic resins for, B., 69, 914.
 comparison of drying times of, B., 161.
 phenolic resin, B., 277.
 testing of, B., 815.
 printers', (P.), B., 1056.
 shellac, effect of hydrochloric acid on, B., 33.
 spirit, B., 1004.
m-styrene, softeners for, (P.), B., 815.
 synthetic resin, production of, (P.), B., 861.
 tung oil, "frosting" of, B., 1055.
 luminescence analysis of, B., 1055.
 determination of inorganic constituents of, B., 238.
Vaseline, fractional extraction in analysis of, B., 710.
Vasicine, A., 995, 1387.
 constitution of, A., 765, 1387.
 and its identity with peganine, A., 365.
 structure of, A., 873.
 synthesis and constitution of, A., 764.
 and its derivatives, A., 873.
 oxidation of, by hydrogen peroxide, A., 1513.
 resolution of, A., 1136.
 See also Peganine.
d- and *l*-Vasicines, A., 1136.
Vasodilation, liberation of histamine-like substances in, A., 651.
Vasopressin, anti-insulin effect of, and oxytocin, A., 543.
 gastric and pulmonary lesions produced by, A., 1284.
 content of, in guinea-pig pituitary, A., 1171.
 antagonistic substance to, in serum of pregnant women, A., 1171.
Vaucheria, stimulation in, A., 419.
Vegetables, influence of soil factors on growth of, B., 326.
 effect of soil reaction on, B., 422.
 effect of fertilisers and soils on composition of, B., 471.
 ammonia liquor as nitrogen fertiliser for, B., 866.
 extraction of soluble constituents in blanching of, B., 250.
 outdoor application of formaldehyde for control of damping-off of, B., 246.
 drying apparatus for, (P.), B., 929.
 coating of, with rubber latex, (P.), B., 39.
 carotene and vitamin-C in, B., 1061.
 mineral content of, B., 166.
 influence of high-frequency electric field on keeping quality of, B., 1020.

- Vegetables**, changes in, during storage, B., 476.
 preservation of, (P.), B., 1022.
 canning of, (P.), B., 429.
 diseases of, B., 246.
 fungicidal pickling of seeds of, B., 375.
 residual arsenic on, after spraying and dusting with arsenical insecticides, B., 423.
 derris as substitute for arsenical insecticides for, B., 1012.
 non-arsenical insecticides for, B., 968.
 at Virginia Truck Experimental Station, B., 968.
 removal of residues of insecticides from, (P.), B., 748.
 spray residues on, B., 875.
 removal of poisonous spray residues from, (P.), B., 380.
 canned, vitamins-*B*₁ and -*B*₂ in, B., 122.
 cooked, preservation of vitamin-*C* in, A., 417.
 dried, vitamin-*C* in, A., 546.
 fresh, preservation and storage of, (P.), B., 477.
 frozen, B., 652.
 microbiology of, B., 331.
 leafy, distribution of calcium in, A., 797.
 Peiping, vitamin-*C* content of, A., 262.
 preserved, heat-resistant micro-organisms in, B., 331.
- Vegetable juices**, production of, (P.), B., 923.
 treatment of, with *Lactobacilli*, (P.), B., 1116.
- Vegetable materials**, refining of, (P.), B., 477.
 drying of, (P.), B., 700.
 spontaneous oxidation of, B., 85.
 natural decay of, B., 199.
- Vegetable powders**, microscopy of, B., 521.
- Vegetable products**, dried, production of, (P.), B., 44.
 analysis of, B., 1020.
- Vegetable substances**, volatile, A., 1128.
- Vehicles**, operation of, with compressed gas, B., 660.
- Veibel's solution**, activity of hydrogen ions in, A., 34.
- Velocity of adsorption**, A., 587.
- Velocity of combustion of gases**, effect of electric field frequency on, A., 708.
- Velocity of crystallisation**, A., 16.
 in magnetic fields, A., 1307.
- Velocity of esterification**, A., 828.
- Velocity of light**. See under Light.
- Velocity of reaction**, and molecular structure, A., 41.
 calculation of, A., 827.
 measurement of, by light absorption, A., 707.
 with the Rayleigh interferometer, A., 586.
 relation of, to affinity, A., 709.
 to oxidation-reduction potentials, A., 1207.
 entropy and, A., 306, 1205.
 variation of, with temperature, A., 1082.
 temperature increment of, A., 709.
 influence of amino-acids, alcohol, and carbamide on, A., 1467.
 in condensed phases, A., 1205.
 at solid-liquid interfaces, A., 829.
 in solution, A., 173, 828, 1208.
 absolute, A., 707, 1206.
 exothermic, A., 586.
 ionic, influence of temperature on, A., 938.
 catalytic action of salts on, A., 309.
 rapid, measurement of, A., 1466.
- Velocity of sound**. See under Sound.
- Velocity of vaporisation of small drops in gases**, A., 699.
- Velour**, production of, from rejected pig skins, B., 420.
- Veneers**, glueing of, with albumin and casein, B., 592.
- Venoms**. See Poisons.
- Veramon**, pharmacology of, and of mixtures of its components, A., 1532.
- Veratraldehyde**, condensation of, with hippuric acid, A., 747.
 condensation product of, with barbituric acid, A., 759.
m-nitrobenzhydrazide and 2:4-dinitrophenylhydrazones, A., 743.
- Veratraldehyde**, 2-amino-, and its oxime, A., 1233.
 6-bromo-2-nitro-, A., 1238.
 5-iodo-, A., 1237.
 6-nitro-, A., 747.
- Veratric acid**, 6-bromo-2-nitro-, A., 1238.
 5-iodo-, A., 1237.
- Veratridine**, constitution of, A., 505.
- Veratrine alkaloids**, A., 505.
- Veratrole**, condensation of, with phenylsuccinic anhydride, A., 1495.
- Veratroyldiazomethane**, A., 342.
- β -Veratroyl- α -phenylpropionic acid**, and its methyl ester, and nitro-, A., 1495.
- Veratryl chloride**, preparation of, A., 79.
- Veratrylideneaminomethylanthydrocotarnine**, A., 767.
- Veratrylidenehippuric acid**, 5-chloro-, and its derivatives, A., 82.
- Veratrylidenerhodanine**, A., 976.
- Verbena officinalis**, constituents of, A., 1041.
- Verbena oil**, B., 45.
- Verbenalin**, identity of, with cornin, A., 1041.
- Vermiculites**, structure and dehydration of, A., 841.
 treatment of, (P.), B., 306.
 manufacture of cellular product from, (P.), B., 899.
- Vermin**, protection of goods against, (P.), B., 98.
 preparation for destruction of, (P.), B., 309, 1062.
- Vernalisation**, B., 742.
- Veronal**, preparation of, from ethyl α -cyanobutyrate, A., 1357.
 crystal structure of, A., 921.
 m.p. of binary systems of, with phenacetin and salol, A., 582.
 compound of, with mercury, A., 459.
 toxicity of mixtures of, with pyrimidone, A., 1532.
- Verticillic acid**, formation and structure of, A., 898.
- Verticillium lateritium**, physiology of, A., 405.
- Vesicants**, from chlorinated ethylamines, A., 849.
- Vetch**, effect of fertilisers, soil type, and climate on, B., 967.
 toxicity and fluorescence of seeds of, B., 876.
- Viale reaction**, A., 1422.
- Vibrio cholerae**, antigenic structure of, A., 1168.
- Vibrios**, cholera and cholera-like, structure of, A., 1168.
- Vicia sativa**, globulins of, A., 268.
- Victoria-blue BX**, as indicator in ceriometry, A., 1339.
- Vigantol**, supplementary feeding of, to milch cows, B., 522.
- Vigna catieng**. See Peas, cow-.
- Villard effect**, density surface of solid diagram representing, A., 943.
- Villikinin**, A., 410.
 content of, in different parts of intestine, A., 258.
- Vinca rosea**, biochemistry of spike disease of, A., 1181.
- Vines**, influence of soil reaction and phosphoric acid on growth of, B., 72.
 fertilisers for, B., 471.
 nitrogen fertilisers for, B., 471.
 treatment of browning and chlorosis of, B., 471.
 mosaic in, B., 168.
 derris dusts and oil-lead arsenate spray for control of squash borer on, B., 778.
 Palestine, and wines therefrom, B., 1016.
- Vinegar**, manufacture of, B., 745.
 fluorescence of, in ultra-violet light, B., 330.
 butyric acid in, B., 744.
 artificial and fermentation, differentiation of, B., 41.
 distillation and fermentation, differentiation of, B., 872.
 lemon, evaluation of, B., 569.
 detection in, of mineral acids, B., 921.
- Vinesthene**. See Divinyl ether.
- Vinyl alcohol**, manufacture of, (P.), B., 1037.
- Vinyl bromide**, polymerisation of, A., 175.
 chloride, polymerisation of, (P.), B., 1153.
 manufacture of foils from polymerisation products of, (P.), B., 721.
 production of synthetic resins from, B., 1103.
 compounds, polymerised, with drying oils, (P.), B., 194.
 use of, as lacquer bases, B., 642.
 derivatives, polymerisation products of, (P.), B., 347.
 esters, manufacture of, (P.), B., 56.
 production of condensation products from, (P.), B., 816.
 production of plastic materials from, (P.), B., 599.
 polymerised, alcohol-soluble pastes of, (P.), B., 368.
 ethers, manufacture of, (P.), B., 584, 761, 795.
 thio-2-benzthiazyl ether, manufacture of, (P.), B., 621.
 thiobenzyl ether, (P.), B., 621.
 thio-8-chloronaphthyl ether, manufacture of, (P.), B., 621.
 thio-5-chloro-2-*p*-xylyl ether, manufacture of, (P.), B., 621.
 thiododecyl ether, manufacture of, (P.), B., 621.
 thioethyl ether, manufacture of, (P.), B., 621.
 thio- β -naphthyl ether, manufacture of, (P.), B., 621.
 thio-*p*-tolyl ether, manufacture of, (P.), B., 621.
 groups, detection of, by formaldehyde, A., 1390.
- Vinylacetic acid**, and its ethyl ester, A., 1482.
 effect of peroxides on orientation of addition of hydrogen bromide to, A., 195.
- Vinylacetic acid**, α -hydroxy-, derivatives of, A., 64.
- Vinylacetylene**, production of, (P.), B., 714.
 Raman effect of, A., 146.
 derivatives, production of, (P.), B., 297.
 syntheses with, A., 470.
 production of halogeno-derivatives of, (P.), B., 618.
 addition of carboxylic acids to, A., 472.

- Vinylacetylene**, halogenation of hydrogen halide addition products of, (P.), B., 395.
- β -Vinylacetylene**, α -bromo-, α -chloro-, and α -iodo-, manufacture of, (P.), B., 618.
- Vinylacrylic acid**, γ -hydroxy-, lactone of. See Protoanemonin.
- Vinylarsine**, β -chloro-, sulphide of, A., 1487.
- α -Vinylcinamic acid**, reduction of, and its ethyl ester, A., 975.
- Vinyldihydrocupreine**, and its dihydrochloride, A., 636.
- Vinylethynylcarbinol**, manufacture of derivatives of, (P.), B., 347.
- Vinylcyclohexane**, catalytic transformation of, A., 611.
- Vinyl- Δ^1 -cyclohexane *cis*-tetrabromide**, A., 1480.
- Vinyl ketones**, hydroxy-, colour of metallic salts of, A., 1371.
- Vinylnaphthalene**, polymerisation of, (P.), B., 1057.
- o*-Vinylphenylarsinic acid**, A., 1515.
- Vinylphenylchloroarsine**, β -chloro-, A., 1515.
- o*-Vinylphenyldichloroarsine**, A., 1515.
- Vinylpropionic acid**, and its α -naphthylamide, (P.), B., 347.
- 9-Vinyl-3,4-pyridino-7:8:9-triazole**, A., 993.
- Vinylpyrroles**, reaction of, with diazomethane and with ethyldiazoacetate, A., 993.
- Vioform**, action of, on tissue culture cells, A., 1161.
determination of, in bandages, B., 1163.
- Violacein**, extraction and purification of, A., 899.
- Violanthrone**, oxidation of, A., 348.
- isoViolanthrone**, production of, (P.), B., 183.
- Violerythrin**, A., 1005.
- Violets**, aldehyde from leaves of, and its synthesis and derivatives, A., 66, 67, 197.
substances with odour of, A., 66.
perfumes of, A., 672.
- Violet leaf-oil**, A., 672.
- Viosterol**, antirachitic value of, A., 417.
effect of, on calcium in dog's bile, A., 793.
on metabolism in rats, A., 1545.
on human tissues, A., 1036.
changes in tissues due to, A., 670.
treatment of asthma and hay fever with, A., 514.
- Virilism**, anterior pituitary hormone in urine in, A., 667.
- Viruses**, protein-free suspensions of, A., 409.
formalised, immunising agents in, A., 1420.
- Viscera**, human, detection of barbital in, A., 118.
- Visconic acid**, and its methyl ester, A., 865.
- Viscose**, B., 184, 488, 587, 718, 844.
production of, (P.), B., 96.
cellulose for, (P.), B., 143.
for artificial silk, films, lacquers, bands, etc., (P.), B., 541.
speed of digestion of pulp for, B., 445.
hemicellulose in waste soda from factories for, B., 586.
clarification of, (P.), B., 58.
influence of temperature on maturation of, B., 299.
effect of alkali-cellulose on ripening of, B., 184.
ripening of syrup of, (P.), B., 1137.
determination of ripeness of solutions of, B., 587.
- Viscose**, light-fast dyes for, B., 59.
solutions, purification of, (P.), B., 448.
conditioning of, for impregnation, etc., (P.), B., 720.
for spinning, (P.), B., 144, 896, 944.
coagulation of, in spinning, B., 1136.
effect of salts on, B., 398.
retarding effect of metallic salts on, B., 623.
spinning of, B., 184.
nozzles for, (P.), B., 944.
aluminium sulphate in baths for, B., 718.
dry spinning of, B., 1136.
composition of spinning baths for, B., 586.
recovery of sodium sulphate from spinning baths for, B., 766.
sizing of yarns of, B., 588.
desulphurisation of artificial filaments of, (P.), B., 720.
effect of latex additions on, B., 16.
effect of ripeness on viscosity and xanthation of, B., 587.
viscosity of dilute solutions of, B., 587.
increasing water-resistance of films of, B., 540.
colloid chemistry of formation of fibres of, B., 142.
manufacture of articles from sponge masses of, (P.), B., 1041.
manufacture of dulled filaments, etc., from, (P.), B., 588.
manufacture of untwisted filaments of, (P.), B., 1138.
manufacture of capsules for sealing bottles from, B., 446.
micro-organisms causing spoilage of materials of, B., 844.
- Viscose products**, manufacture of, (P.), B., 17, 1089.
- Viscosimeters**, A., 189; (P.), B., 84, 178, 291, 388, 532, 883, 1077.
for cellulose nitrate solutions, etc., B., 785.
conical cylindrical, A., 723.
falling-sphere, A., 925.
Höppler, A., 1098.
Höppler and Vogel-Ossag, A., 1342.
micro-, A., 1098.
precision, A., 1342.
Redwood, determination of viscosity in absolute units with, B., 177.
resistance, for ceramic moulding materials and cement sludge, B., 681.
rotating sphere, A., 840.
Steiner, B., 1.
suspended level, nomogram for correction of, A., 1219.
- Viscosity**, A., 22; B., 289.
measurement of, A., 816.
with a chronometric motor, A., 467.
at high temperatures, A., 321.
effect of surface tension on, A., 439.
Herzog's measurements of, A., 1342.
indicating device for, (P.), B., 579.
comparison of data of, A., 692.
according to the geometrical weight method, A., 1065.
and molecular association, A., 438.
and plasticity of disperse systems, A., 701.
in critical state, A., 925.
relation of, to vapour pressure and latent heat, A., 575.
anomalies in, A., 290.
of aqueous solutions, A., 693.
of aqueous solutions of strong electrolytes, A., 443, 1072.
of binary mixtures, A., 817, 1066.
- Viscosity of disperse systems**, A., 579, 820, 932, 1318.
of gases, effect of temperature on, A., 1455.
of paramagnetic gases in a magnetic field, A., 575.
of liquids, control of, (P.), B., 755.
apparatus for measurement of, at high pressure, A., 840.
effect of electric field on, A., 926.
effect of magnetic field on, A., 1198, 1455.
of mixed liquids at high pressures, A., 24.
of mixtures, Gurwitsch table for, B., 881.
of paraffins, measurement of, A., 728.
of polymericides, influence of sexatomic rings on, A., 1067.
of solutions by Scarpa method, A., 599.
of solutions of electrolytes, A., 1318.
of dilute solutions of non-electrolytes, A., 1317.
of solutions of polymericides, A., 1074.
of tetrachlorides of elements of fourth periodic group, A., 438.
absolute, measurement of, by the pendulum viscosimeter, A., 925.
absolute and relative, B., 705.
complex, A., 1065.
kinematic, A., 575.
magnetic, effect of mechanical vibration on, A., 922.
rotatory and translatory, A., 22.
structure, theory of, A., 692.
turbulence, A., 575.
- Viscose-elasticity**, A., 575.
- Viscous liquids**. See under Liquids.
- Viscous materials**, crushing and mixing of, (P.), B., 177.
influence of proximity of solid wall on consistency of, A., 1455.
- Viscous substances**, measurement of surface tension of, B., 885.
- Viscous systems**. See under Systems.
- Vitamins**, A., 261, 414, 1427.
discovery and significance of, A., 792.
structure of, A., 792.
X-ray study of, B., 173.
sources of, B., 171.
synthesis of, A., 543.
extraction of, from fatty materials, (P.), B., 959.
concentrates of, (P.), B., 650.
refinement of concentrates of, from oils and fats, (P.), B., 1150.
manufacture of preparations of, (P.), B., 524.
preservation of, (P.), B., 379.
examination of, with Wood's light, A., 792.
biological investigation of, A., 1175.
specificity of, A., 902.
enzymes, and maximum colloidal index, A., 121.
relation of, to hormones, A., 1034.
to production of urinary calculi, A., 1427.
metabolic effects of, B., 922.
effect of sunlight on action of, A., 131.
action of, on blood-catalase, A., 546.
on lipolysis and bactericidal index, A., 792.
on growth of normal and tumour tissues, A., 1174.
with zinc on animal nutrition, A., 1279.
human requirements for, A., 1427.
in brown algae, A., 414.
in apples, A., 414.
in cacao-bean shells, B., 77.
production of, by cultures of *Chlorococcum*, A., 260.

Vitamins in cod-liver oil, B., 733.
 in fatty substances, B., 732.
 in figs, B., 572.
 in foods, A., 417.
 in olive oil, B., 416.
 in pears, A., 414.
 in seedless grapes and raisins, B., 572.
 antihæmorrhagic, in chicks, A., 903.
 antineuritic, products for, (P.), B., 780.
 fat-soluble, A., 260.
 and anti-oxidants in plants, A., 130.
 assay of, A., 415.

Vitamin-A, A., 260.
 formation of, from β -carotene, A., 1286.
 synthesis of, A., 978, 979, 983.
 purification of, A., 260.
 preparation of concentrates of, A., 1546.
 Lovibond unit of, A., 1428.
 absorption spectra of, in animal and vegetable oils, A., 414.
 fluorescence of substances containing, A., 12.
 synthesis of an alcohol related to, A., 611.
 physiologically active crystalline esters of, A., 1545.
 crystalline derivatives of, A., 543.
 and carotene, A., 261.
 distinction of, from carotene, A., 1428.
 specific effect of, on growth, A., 415.
 effect of feeding with, A., 1545.
 assimilation of, in presence of mineral oil, A., 261.
 feeding of, to prevent injury from excess vitamin-D, A., 1177.
 in nutrition, A., 1034.
 of dairy cows, A., 668.
 effect of, on dental tissues, A., 382.
 on metabolism, A., 261.
 on cholesterol metabolism, A., 1034.
 on serum-cholesterol, A., 1034.
 on water retention, A., 1174.
 effect of large doses of, on lipins, A., 668.
 relation of, to liver disorder, A., 792.
 to respiration in tissues, A., 792.
 antagonism of, to thyroxine, A., 792.
 absorption and storage of, in rats, A., 260.
 effect of, in rats, A., 1543.
 blood-cell changes in rats due to, A., 1428.
 absorption of, by choledochocolonostomised rats, A., 1427.
 ration deficient in, for rats, A., 1035.
 effect of deficiency of, on blood-lipins in albino rats, A., 415.
 effect of deficiency of, on reproduction in sows, A., 792.
 requirement of, for turkeys, A., 543.
 transmission of, from parents to young, A., 415.
 in animals and plants, A., 414.
 in blood, effect of nervous system on, A., 1034.
 content of, in varieties of carrots, A., 543.
 in cow- and bull-liver, A., 129.
 in eggs, B., 571, 971.
 in egg-yolk, A., 792.
 in hen's eggs, A., 1428.
 content of, in foodstuffs, A., 129.
 in New Zealand ling-liver oil, B., 683.
 in sweet potatoes, B., 652.
 in serum after administration of halibut-liver oil, A., 129.
 from sterols, A., 129.
 detection of, magneto-optically, A., 1428.
 spectrophotometrically, A., 792.
 in blood, A., 668.
 spectrographically, in fats and oils, A., 1428.
 detection and determination of, colorimetrically, A., 1428.

Vitamin-A, determination of, A., 414, 1034.
 by single feeding method, A., 261.
 with the Hilger vitameter, A., 792.
 in blood, A., 792.
 in blood-serum, A., 1427.
 in Indian fish-liver oils, A., 1428.
 in human milk and serum, A., 1427.
 See also Biosterol.

Vitamin-B, structure of, A., 504.
 complex nature of, A., 1174.
 extraction of, A., 544.
 from fuller's earth adsorbates, A., 415.
 concentrates of, for supplementation of milk, B., 171.
 effect of type of carbohydrate on synthesis of, in rats, A., 1035.
 effect of deficiency of, on utilisation of energy-producing nutriment and protein, A., 261.
 on oxido-reduction in lens of eyes, A., 544.
 relation of, to carbohydrate metabolism, A., 415.
 to carbohydrate retention, A., 669.
 to carbohydrate, fat, and protein in diet, A., 544.
 sparing action of fats on, A., 544.
 as substitute for insulin, A., 1286.
 crystalline, as growth factor for micro-organisms, A., 534.
 water-soluble, A., 544.

Vitamin-B₁, A., 415.
 preparation and chemistry of, A., 415.
 preparation of, from yeast, A., 1286.
 improved yields of, A., 544.
 properties of, A., 1175.
 optical properties of, A., 261.
 electrical migration of, in aqueous solution, A., 1175.
 blue fluorescent substances from oxidation of, A., 1429.
 blue fluorescent compounds from, A., 415.
 derivatives of, A., 1510.
 sparing action of fats on, A., 130.
 action of hydrochloric acid on, A., 1385.
 auxogenic action of, on micro-organisms, A., 1027, 1175.
 influence of carbohydrates on deficiency of, A., 415.
 blood-pyruvate in deficiency of, A., 669.
 content of, in foods, A., 1035.
 in bread, B., 1019.
 in glutinous rice, A., 792.
 crystalline, A., 544, 668, 1035, 1385, 1510.
 ultra-violet absorption spectrum of, A., 544.
 fluorescent product from, A., 1286.
 action of, on tissue oxidation in pigeon's brain, A., 668.
 treatment of human beriberi with, A., 1429.
 determination of, by potentiometric titration, A., 668.
 See also Oryzanin.

Vitamin-B₂, A., 545.
 synthesis of, A., 760, 1382.
 nomenclature of, A., 545.
 components of, A., 544.
 concentration and chemical nature of, A., 130.
 sugar-like side-chain of, A., 760.
 concentration of, from fuller's earth adsorption, A., 415.
 growth-promoting properties of concentrates of, A., 130.
 photochemistry of, A., 1175.
 effect of pH on stability of, A., 416.
 action of, A., 130.
 lactoflavin and anti-pellagra factor in, A., 545.

Vitamin-B₃, inanition as factor in deficiency of, A., 262.
 rôle of thiol group in deficiency of, A., 544.
 in relation to cystine, A., 1546.
 non-identity of, with flavins, A., 262, 669.
 identity of, with lactoflavin, A., 545.
 in cow's milk, A., 545.
 content of, in dried skim-milk, A., 416.
 in home-canned tomato juice, B., 572.
 requirement of, for chicks, A., 1429.
 administration of, to children, A., 1175.
 synthetic, A., 262.
 determination of, by fluorescence, A., 1035.
 See also Lactoflavin.

Vitamin-B₆, A., 545.

Vitamin-C, A., 608, 1175, 1429.
 sources of, B., 747.
 structure and synthesis of, A., 1429.
 synthesis of, A., 66.
 in the animal organism, A., 416.
 by luteal tissue, A., 416.
 manufacture of, (P.), B., 701.
 by acetic bacteria and yeast, A., 670.
 influence of freezing and preservatives on, B., 428.
 titration curves and dissociation constants of diethyl dihydroxymalate and, A., 1460.
 depigmentation by, A., 1176.
 biological genesis of, A., 263.
 biological activity of, A., 547.
 values of, by biological and chemical methods, A., 1430.
 biological value of, A., 417.
 action of biological agents on, A., 1036.
 effect of, on germination and growth of seeds, A., 1430.
 effect of cooking of vegetables on, A., 417.
 arrest of heavy bleeding by, A., 644.
 destruction of, by diphtheria toxin, A., 1036.
 effect of, on diphtheria toxin, A., 1429.
 on metabolism, A., 793.
 on plasma-proteins, A., 131.
 in pigment metabolism, A., 669.
 consumption and storage of, in animals, A., 546.
 excretion and storage of, in the body, A., 1286.
 distribution of, in organs of fox, A., 1176.
 requirement of, by guinea-pigs, A., 1286.
 in guinea-pigs fed on ascorbic acid, effect of thyroid, 2:4-dinitrophenol, and cortical hormone on, A., 1421.
 effect of fluoride feeding on storage of, in guinea-pigs and rats, A., 793.
 effect of dietary deficiency of, on rats, A., 1429.
 in relation to adrenals, A., 262.
 fate of, in digestive tract, A., 1541.
 relation of, to alexin, A., 882.
 identity of, with ascorbic acid, A., 846.
 relation between chlorophyll and, A., 131.
 influence of, on dopa-reaction, A., 670.
 diagnosis of lack of, by urine analysis, A., 417.
 distribution of, in adrenals, A., 1036.
 in berries and fruits, B., 428.
 in blood and urine after injection, A., 669.
 in cabbages, B., 921.
 in feeding-stuffs and vegetables, B., 1061.
 in Chinese foods and drugs, A., 903.
 in Indian foods, A., 262.
 in fruits, berries, and vegetables, A., 417.
 in fruit juices and apples, B., 172.
 in Chinese citrus fruit, A., 262.

Vitamin-C in dried fruit and vegetables, A., 546.
 in Peiping summer fruit and vegetables, A., 262.
 in Chinese iris, A., 262.
 in milk, low stability of, A., 1005.
 in human milk, A., 546.
 in onions, cucumbers, carrots, garlic, sorrel, mandarins, berries, etc., B., 171.
 in lower organisms, A., 1176.
 distribution of, in pituitary, A., 1264.
 in plant tissues, A., 1176.
 in skin, A., 546.
 in tomato purée, B., 747.
 in urine, A., 131, 546, 1176.
 in normal and pathological urine, A., 793.
 in "Vitapric," B., 1116.
 detection of, colorimetrically, A., 262.
 determination of, A., 416, 547, 1287, 1430.
 by Bezsonoff's reagent, A., 670.
 colorimetrically, A., 793.
 with 2:6-dichlorophenol-indophenol, A., 793.
 electrometrically, A., 1546.
 microchemically, A., 793.
 in blood, A., 547.
 in blood-serum, A., 547.
 See also Ascorbic acid.

Vitamin-D, production of, (P.), B., 972.
 unit of, A., 129.
 preparations of, (P.), B., 1068.
 water-miscible preparations of, (P.), B., 1166.
 physiological effect of aqueous preparations of, A., 670.
 thermal and photochemical decomposition products of, A., 1037.
 absorption of, through the skin, A., 129.
 depression of intestinal reduction by, A., 1431.
 physiological action of, in relation to parathyroids, A., 1423.
 thyrotropic action of, A., 793.
 influence of, on p_H of faeces, A., 547.
 in relation to thymus function, A., 1034.
 influence of calcium and phosphorus in diet on requirement of, A., 1431.
 calcium and phosphorus in offspring after feeding, to mother rats, A., 1177.
 activation of, in foods, etc., (P.), B., 973.
 from cod-liver oil, identity of, with vitamin- D_2 , A., 1430.
 effect of, on production and properties of eggs, A., 1287.
 content of eggs, after feeding with cod-liver oil and irradiated ergosterol, A., 417.
 in hen's eggs, A., 1428.
 relation of, to calcium and phosphorus retention in cattle, A., 1154.
 in nutrition of calves, A., 1430.
 injury to fowls from, A., 903.
 in fish-liver oils, A., 417.
 in vegetable oils, A., 1036.
 in ointment bases containing cholesterol, B., 429.
 in wool-fat, spectroscopic analysis of, A., 793.
 crystalline, change of activity of, and its spectrographic determination, A., 903.
 biochemical standardisation of, A., 1176.
 identity of, from various species of animals, A., 1430.
 assay of, with experimental chicks, A., 1287.
 determination of, A., 417.
 See also Calciferol.

Vitamin- D_2 , identity of, with natural vitamin- D from cod-liver oil, A., 1430.
Vitamin-E, A., 129, 670, 1177, 1287.
 preparation and properties of concentrates of, A., 548, 1431.
 surface films of concentrates of, A., 418.
 absorption spectrum of, A., 1037.
 from wheat-germ oil, A., 418.
 relation of, to cell division, A., 130.
 relation between sex hormones and, A., 261.
 effect of, on fertility of poultry, A., 794.
 effect of deficiency of, on pituitary, A., 1547.
 crystalline derivatives of, A., 1546.
Vitamins-A and -C, antagonism of, A., 1174.
Vitamins-A and -D, effect of, on mouse tumours, A., 236.
Vitamins-B and -D, supplementary action of, A., 547.
Vitamins- B_1 and - B_2 , in canned foods, B., 122.
 in prunes, B., 921.
 effect of diet on requirements of, for growing rats, A., 262.
Vitamins- B_1 , - B_2 , and - B_4 , stability of, A., 669.
Vitamin- B_2 -phosphoric acid, synthetic, A., 545.
 "Vitapric," vitamin-C in, B., 1116.
Vitazymes, A., 1161.
Vitellin, serum-, isolation of, A., 1002.
Vithal, supplementary feeding of, to milch cows, B., 522.
Vitis, effect of zinc on growth of, A., 672.
Vitran, structure of, A., 61.
 origin of, A., 61.
Vitreous compositions, manufacture of, on mica base, (P.), B., 149.
Vitreous humour. See under Eyes.
Vitreous materials, electric furnaces for melting of, (P.), B., 23.
 allotropy and crystallisation of, A., 154.
Vitreous state, A., 285, 572, 918.
Vitrification, relation of temperature of, to mol. wt., A., 1062.
Vivianite in Columbia, A., 842.
Voges-Proskauer reaction, A., 1419.
Volatile substances, distillation and rectification of dilute solutions of, B., 609.
Volatility, law of, A., 724.
Voltage, breakdown, influence of photo-electric current on, A., 683.
Voltmeters, vacuum-tube, line-operated, A., 1340.
 valve, A., 952.
Voltol oil, chemistry of formation of, B., 292.
Volume, effect of high pressures on electrical resistance and, A., 567.
 molecular, relation of, to b.p. and molecular refraction, A., 916.
 of electrolytes in concentrated solutions, A., 1066.
 apparent, theory of, A., 162.
Volumenometers, micro-, A., 58.
Volutin, detection of, in yeast cells by neutral red, A., 534.
Vomiting, effect of, on sodium chloride in blood, A., 1010.
Vulpinic acid, reduction of, A., 1238.
Vulpinic acid, *p*-hydroxy-, diacetate, A., 1238.

W.

Wagner rearrangement, in Hofmann degradation, A., 853.
Walden inversion, A., 14, 1228.

Walden inversion, substitution by free atoms and, A., 307.
 and aliphatic substitution, A., 1465.
 in sugar group, A., 199, 964.
Walls, coverings for, (P.), B., 1005.
 insecticide for plaster on, (P.), B., 770.
 decorative and acoustic finish for, (P.), B., 593.
 Japanese, mucilage of alga used for cementing of, B., 852.
Wallboard, (P.), B., 806.
 manufacture of, (P.), B., 97, 676.
 gypsum, manufacture of, (P.), B., 727.
Wallpaper, waterproof coating for, (P.), B., 97.
 washable, (P.), B., 144.
Walnuts, bleaching of, (P.), B., 380.
 storage of, during winter, B., 1021.
Walnut starch. See under Starch.
Warehouses, fumigation of, B., 832.
Warfare, chemical, sealed rooms for collective protection in, B., 207.
 contamination of foods in, B., 44.
 effect of gases used in, on foods and water, B., 526.
 paints for protection against gases in, B., 417.
Wash-bottles, for quantitative work, A., 321.
Wash oils, thickening of, B., 660.
 used, purification of, (P.), B., 180.
 recovery of, (P.), B., 56.
Washing, colloid-chemical basis of, B., 508.
 reactions between textile fabrics and detergents in, B., 765.
 of textile materials, (P.), B., 846.
Washing agents, (P.), B., 492, 733.
 production of, (P.), B., 3, 139, 487, 585, 939, 940, 1150.
 corrosion of copper and copper-nickel alloys by, B., 27.
Washing apparatus, countercurrent, (P.), B., 178.
 rotary, (P.), B., 434.
Washing machines, (P.), B., 766.
Wassermann reaction, behaviour of alexin fractions in, A., 1002.
 effect of salts on, A., 1403.
 effect of serum-globulin on, A., 109.
Waste, disposal of, (P.), B., 928.
 internal corrosion of cast-iron pipes for, B., 1097.
 agricultural, utilisation of, B., 432, 604.
 creamery, p_H of, B., 874.
 creamery and packing-house, purification of, B., 336.
 dairy, utilisation of, B., 1021.
 cyanide, treatment of, B., 1168.
 de-inking, purification of, (P.), B., 1005.
 industrial, purification of, (P.), B., 1072.
 apparatus for distillation of, (P.), B., 656.
 malt-house, treatment of, in Wisconsin, B., 928.
 meat-packing, treatment of, B., 1168.
 milk, digestion of, by activated sludge organisms, B., 1168.
 organic, treatment of, (P.), B., 1072.
 packing-house, digestion of mixtures of domestic sewage and, B., 431.
 paper-mill, treatment of, (P.), B., 1072.
 phenolic, B., 1168.
 pulp- and paper-mill, effect of, on fish, B., 928.
 trade, treatment of, with activated carbon, B., 832.
Water, isotopic fractionation of, by distillation and evaporation, A., 458.
 vapour pressures of isotopes of, A., 1064.

Water, isotopic exchange between acetylene and, A., 713.
 scattering of neutrons by, A., 1296.
 constitution of, in solutions, A., 295, 569.
 in solutions of weak electrolytes, A., 1058.
 effect of temperature on, in electrolytic solutions, A., 1201.
 in solutions of non-electrolytes, A., 1445.
 influence of dissolved electrolytes on, A., 11.
 recovery of, from the atmosphere, (P.), B., 928.
 treatment of, with chloramines, B., 256.
 to prevent corrosion, B., 480.
 with ozone, B., 48.
 for paper mills, B., 976.
 electrolytic treatment of, in hot-water systems, (P.), B., 611.
 purification of, B., 832; (P.), B., 480, 1072.
 apparatus for, (P.), B., 704.
 by ammonia-chlorine process, B., 128.
 with ozone, B., 176.
 in Borga, Finland, B., 527.
 in breweries and distilleries, B., 76.
 use of active carbon in, B., 528.
 with activated carbon in the tropics, B., 1168.
 excess lime in, B., 255.
 influence of temperature on coagulation in, B., 432.
 application of "hydraulic jump" to, B., 384.
 pollution loadings for, B., 336.
 for swimming baths, (P.), B., 1024.
 agitation and alum-floc formation in, B., 256.
 clarification of, (P.), B., 80.
 filtration of, plant for, (P.), B., 176.
 anthracite for use in filter plants for, B., 1078.
 filter sand for, B., 480.
 porous plates for filters for, B., 527.
 sand filters for, B., 704.
 protective colloids for prevention of formation of lime-soap in, B., 784.
 deposition of calcium carbonate from, B., 432.
 removal of copper from, by sodium aluminate, B., 432.
 removal of fluorides from, by sand filtration, B., 256.
 removal of iron from, (P.), B., 832.
 removal of organic compounds from, (P.), B., 784.
 removal of slimy growth from surfaces in contact with, (P.), B., 976.
 prevention and removal of slime formed by, in condensers, etc., (P.), B., 1077.
 control of colour and odour of, at Ossining, New York, B., 527.
 control of taste and odour of, B., 527.
 at Council Bluffs, Ia., B., 527.
 removal of taste and odour from, in Bulawayo, B., 127.
 at Hackensack Water Co., N.J., B., 127.
 at Minneapolis, Minnesota, B., 127.
 at Saginaw, Mich., B., 127.
 aëration of, by air diffusion, B., 880.
 chlorination of, (P.), B., 384.
 apparatus for, B., 128.
 dechlorination of, with activated and non-activated charcoals, B., 288.
 effect of ammonia on chlorine consumption of, B., 608.
 coagulation of, with ferric chloride, B., 607.

Water, coagulation of, with iron compounds, B., 127.
 control of, B., 336.
 conditioning of, after chloramine treatment, for biological use, B., 528.
 distillation apparatus for, (P.), B., 388.
 screening apparatus for, (P.), B., 788.
 sterilisation of, (P.), B., 208.
 with chloramine and chlorine, B., 927.
 with silver, B., 335.
 with ultra-violet light, B., 608.
 bactericides for, (P.), B., 1120.
 control of addition of hypochlorites for, B., 256.
 measurement of hardness of, A., 34.
 softening of, (P.), B., 3, 482, 532, 788, 978.
 nomograph for lime-soda process for, B., 880.
 apparatus for, (P.), B., 610, 755, 930.
 stopper for apparatus for, (P.), B., 1078.
 water-current indicator for apparatus for, (P.), B., 978.
 base-exchange apparatus for, (P.), B., 978.
 zeolite apparatus for, (P.), B., 658.
 with aluminium and zinc, B., 432.
 base-exchange substances for, (P.), B., 948, 991.
 with hydrogen-permutit, B., 1.
 rôle of sodium aluminate in, B., 480, 576.
 use of trass in, B., 1.
 calculation of amount of reagents for, B., 705.
 pump for circulation of, A., 189.
 mathematics of mixing problems with, B., 432.
 change of properties of, about 40°, A., 815.
 infra-red investigation of hindered rotation in, A., 806.
 infra-red absorption spectrum of, A., 1053.
 far infra-red spectrum of, A., 1052.
 luminescence in, caused by ultrasonic waves, A., 429.
 action of X-rays on, A., 46.
 and its derivatives, electron configuration of, A., 1188.
 electrical conductivity of, A., 1055.
 electrolysis of, (P.), B., 1100.
 apparatus for, (P.), B., 193, 774, 1053, 1148.
 effect of pressure on overvoltage of, A., 38.
 anomalous electrolysis of, A., 310.
 activity coefficients of, in sodium hydroxide-methyl alcohol solutions, A., 447.
 variation of dielectric constant of, on adsorption, A., 1447.
 magnetic susceptibility of, A., 923.
 effect of temperature on diamagnetism of, A., 149.
 diamagnetism of deuterium oxide and, A., 435.
 effect of dissolved air on specific heat of, A., 20.
 and water vapour, heat content of, A., 690.
 heats of dilution and of vaporisation of mixtures of, with deuterium oxide, A., 935.
 latent heat of fusion of equilibrium mixtures of, with deuterium oxide, A., 704.
 heat of vaporisation and specific volume of saturated vapour of, A., 1454.
 latent heat of vaporisation of, A., 1454.
 freezing of, by fractional evaporation, B., 433.
 absolute temperature of normal f.p. of, A., 1454.

Water, f.p. of mixtures of heavy water and, A., 167.
 supercooling of, A., 829, 1449.
 condensation of drops of, on different solids, A., 284.
 pure, b.p. of, A., 289.
 vapour, potential produced by flow of, A., 707.
 formation of negative ions in, A., 140.
 dielectric constant of, A., 1304.
 saturation curve of, below the critical point, A., 815.
 effect of air on condensation of, A., 160.
 viscosity of, A., 22.
 adsorption of, from air, by inorganic gels, A., 1068.
 sorption of, by cellulosic materials, A., 1315.
 formation of droplets in, A., 25.
 mixtures of deuterium oxide and, A., 694.
 transmission of, through papers and paper boards, B., 943.
 reaction of, with sulphur trioxide, A., 40.
 accommodation and evaporation coefficients of, A., 690.
 density of, A., 691.
 from various sources, A., 156.
 in relation to its thermal history, A., 437.
 determination of variations in, A., 437.
 association of, in dioxan solutions, A., 931.
 dissociation energy of, A., 586.
 pressure exerted by materials absorbing, when maintained at constant length, B., 1.
 absorption of mists of, in gas masks, B., 479.
 retention of, by fine-pored media, A., 1316.
 titration of substances affecting surface tension of, A., 1317.
 velocity of crystallisation of ice from deuterium oxide and, A., 439.
 quadruple point of systems of ether and, A., 35.
 equilibrium of, with heavy hydrogen, A., 33.
 determination of oxidisability of, B., 383.
 effect of activated carbon on oxidising agents in, B., 608.
 decomposition of, by X-rays in presence of bromides and iodides, A., 1468.
 photolysis of, A., 46.
 oligodynamic action of metals and "katadyn" process for, B., 656.
 diamagnetic susceptibility of polymerides of, A., 689.
 deuterium content of, A., 590.
 concentrating deuterium in, by electrolysis, A., 1467.
 critical data of mixtures of, with deuterium oxide, A., 1454, 1456.
 zero point energy and physical properties of deuterium oxide and, A., 432.
 diffusion of deuterium hydroxide and oxide into, A., 1313.
 effect of fluorine in, on potability, B., 608.
 reaction of fluorine with, A., 461.
 action of magnesium on, A., 312.
 effect of war gases on, B., 526.
 pure, hydrolysis of esters in, A., 938.
 wetting of glass by, A., 29.
 adsorbed on glass, reactions of, A., 1069.
 removal of oxygen from air by, B., 47.
 resistance of paints to sea water and, B., 464.

Water, presses for removal of, (P.), B., 610.
 collection of samples of, for gas determination, A., 467.
 chemical and bacteriological examination of, B., 176.
 determination of chlorine value of, B., 256.
 pollution of, B., 176.
 effects of algal activity in, B., 1071.
 effect of algal growth on p_H of, B., 128.
 bacterial clarification of, B., 576.
 standards for bacterial quality of, B., 1071.
 bactericidal action produced in, by electrolysis with silver anode, A., 1170.
 germicidal activity of silver in, B., 528.
 larvicidal treatment of, with Paris-green, B., 528.
 removal of causative organism of amoebic dysentery from, B., 256.
 culture media for *B. coli* in, B., 1071.
 isolation of *Bacillus coli aerogenes* from, B., 1071.
 occurrence and control of iron bacteria in, B., 127.
 control of mosquito larvae in, B., 384.
 nitrifying bacteria in, B., 527.
 isolation of paratyphoid and typhoid bacilli from, A., 786.
 testing of residue from, with polarising microscope, B., 208.
 exchange of, in the organism, A., 525, 652, 1524.
 and heat regulation, A., 656.
 effect of ingestion of, on alkali reserve and p_H , A., 651.
 effect of lack of, on animal tissues, A., 892.
 effect of fluorine in, on teeth, A., 399.
 elimination of, from the human body, A., 246.
Water, alkaline, deterioration of concrete in, B., 592.
 of Asolo, Treviso, A., 468.
 of autonomous Sandjak of Alexandretta, electrical conductivity of, A., 1477.
 for baths, radioactive preparations for, (P.), B., 288.
 containing bicarbonates, flocculation of, B., 576.
 boiler-, treatment of, B., 209; (P.), B., 2, 386, 882.
 organic matter in, B., 81.
 electrical purification of, (P.), B., 755.
 removal of oxygen from, by sodium sulphite, B., 529.
 degasification of, B., 705.
 effect of hardness of, B., 129.
 costs of apparatus and chemicals for softening of, B., 433.
 oil in, B., 529.
 use of mountain water as, B., 209.
 for small boilers, B., 209.
 de-aerated, determination in, of oxygen, B., 529.
 soft, treatment of, B., 289.
 determination in, of oxygen, B., 209.
 brewery, B., 556.
 mineral constituents of, B., 779.
 chlorine treatment of, B., 656.
 rich in chlorides, determination of oxidisability of, B., 336.
 coal-washery, conditioning of, B., 338, 339.
 connate, radium in, A., 322.
 de-aerated, determination in, of dissolved oxygen, B., 832.
 deuterium-free, preparation of, A., 590.
 distilled, production of, (P.), B., 608.

Water, distilled, apparent absorption of oxygen from permanganate by, B., 47.
 drinking, treatment of, (P.), B., 336.
 oligodynamic treatment of, by "kataklysm" processes, B., 256.
 purification of, by phosphate method, B., 48.
 sterilisation of, by ultra-violet light, B., 384.
 coagulation of, with aluminium sulphate, B., 48.
 of Berne, chlorine treatment of, B., 432.
 determination of bacteriological quality of, B., 1072.
 detection in, of fluorine, B., 384.
 determination in, of albuminoid ammonia, by Winkler method, B., 384.
 of fluorine, B., 1024.
 of lead, B., 432, 527.
 with sodium meta- and pyrophosphates, B., 752.
 of phosphorus, B., 384.
 effluent, purification of, by hydrogels, B., 480.
 fountain, of canton of Geneva, B., 704.
 German, occurrence of radium in, A., 1477.
 hard, separator for treatment of, (P.), B., 4.
 heavy. See Deuterium oxide.
 iodised and sulphurated, in S. Bavaria, A., 956.
 ionised, thermodynamics of, in sodium chloride solutions, A., 1461.
 irrigation, potassium in, B., 373.
 changes in salt content of, B., 243.
 light, preparation of, and its deuterium content, A., 1087.
 density of, A., 815.
 polluted, purification of, (P.), B., 432.
 natural oxidation in, B., 928.
 saline, of Peru, recovery of sodium carbonate from, B., 704.
 salty, increasing palatability of, by dilution and carbon treatment, B., 880.
 soft, effect of excess calcium hydroxide on corrosive action of, B., 1072.
 surface, removal of phenol from, B., 880.
 improvement of taste of, B., 784.
 influence of ash deposits on, B., 927.
 swimming bath, treatment of, B., 432.
 filtration of, (P.), B., 4.
 testing of, B., 80.
 waste, treatment of, (P.), B., 480.
 purification of, (P.), B., 48, 432.
 removal of phenols from, B., 336.
 zero-softened, corrosion by, B., 608.
Water, natural, deuterium content of, A., 841.
 effect of organic colloids on salts in, A., 1099.
 deep and surface, in Geneva, A., 600.
 of European Russia, concentration in, A., 1099.
 ground, determination in, of chlorides, A., 52.
 lake, from the Dead Sea, A., 600.
 of Lake Boza, A., 60.
 of Lake Kutschuk, vapour pressure and isothermic evaporation of, A., 953.
 of Lake Osoresanko, Japan, stratification in, A., 190.
 of Lake Turgoyak, radioactivity of, A., 953.
 of Maru-numa and Oozirinuma, Japan, A., 322.
 from Minnesota, A., 841.

Water, natural, lake, Takasukanuma, deposits in, A., 60.
 at Witzenhausen a.d. Werra, colloids in, A., 322.
 magmatic and meteoric, A., 1343.
 mineral, control of, B., 332.
 deuterium oxide content of, A., 841.
 formation of hydrogen sulphide and thiosulphates in, A., 1470.
 sodium chloride, helium, and lithium contents of, A., 322.
 biological effect of, A., 1023.
 of Abbarghente, Romana-Sassari, A., 468.
 of Bad Peterstal, analysis of, A., 600.
 of Bagnères-de-Bigorre, p_H of, A., 1219.
 of Boniface spring, Morszyn, A., 190.
 carbonated, from Burgenland, A., 841.
 of Czechoslovakia, deuterium oxide in, A., 953.
 of Fairmount Park, A., 1343.
 French, fluorine in, A., 190.
 from Hot Springs, Arkansas, radioactivity of, A., 953.
 of Ilmen district, radioactivity of, A., 953.
 of Indian Hot Springs, Arizona, A., 1343.
 iodine-containing, of Yugoslavia, A., 840, 841.
 Karlsbad, action of, on blood-serum, A., 1161.
 of Korea, radon content of, A., 60.
 of Lurisia and Mondovi, A., 1477.
 of Očeslavec, A., 468.
 Slovakian, analysis of, in relation to growth of *Spirogyra*, A., 661.
 Slovenian, A., 841.
 of Strumicka Banja, A., 841.
 sulphur, of Tivoli, on glutathione content of organs, A., 646.
 thermal, of Pistany, Czechoslovakia, sulphur compounds in, A., 190.
 from Val Calcaona, Padua, A., 468.
 of the Valleverde spring, Abruzzo, A., 1219.
 of the Velika thermal spring, A., 1219.
 of Venice, A., 60.
 of Zomaro, Calabria, A., 60.
 detection in, of caesium, potassium, and rubidium, spectrographically, A., 463.
 determination in, of caesium, A., 719.
 of organic matter, A., 462.
 of sulphur acids, A., 184.
 oil-field, origin of, A., 1219.
 radium in, A., 190.
 of Azerbaidjan, Dagestan, and Kuban oil-fields, radioactivity of, A., 190.
 of Bibi-Eibat oil-field, radium in, A., 190.
 of Ukhta oil-field, thorium-X in, A., 190.
 analysis of, B., 432, 608.
 of Ukhta region, radium in, A., 60.
 from petroleum sources, isotopes in, A., 1099.
 of Turin hills, lithium in, A., 1343.
 rain, isotopes in, A., 953, 1219.
 ratio of deuterium to hydrogen in, A., 815.
 tropical, analysis of, and its effect on agriculture, A., 953.
 determination in, of sulphur, A., 1215.
 Rainierian, A., 468.
 river, corrosion of iron dykes by, B., 498.
 toxicity of hydrocarbons in, to fish, B., 1072.
 R. Elbe, purification of, B., 704.
 R. Neva, coagulation of, B., 48.
 Ohio river, control of mine drainage into, B., 1072.

Water, natural, river, Rangoon River, damage of wood in, B., 102.
 in R. Sakma basin, mineralisation of, A., 1099.
 of St. Lawrence estuary, chlorine and dissolved oxygen in, B., 1024.
sea, acid-base equilibrium in, A., 322.
 occurrence of gold in, A., 468.
 iron in, and in marine plankton, A., 1343.
 occurrence and determination of manganese in, A., 464.
 liberation of phosphate in, by breakdown of plankton, A., 1281.
 distribution of isotopic water in, A., 600.
 ionic ratios in, A., 953.
 corrosion in, B., 855.
 corrosion of aluminium alloys by, B., 28.
 effect of, on cement, B., 631.
 deterioration of concrete in, B., 592, 631.
 copper alloys resistant to, (P.), B., 680.
 corrosion of iron and duralumin by, B., 28.
 corrosion of iron dykes by, B., 498.
 corrosion of metals in, B., 231.
 corrosion of steel in, B., 635.
 buffer action of, A., 38.
 organic metabolism of, A., 1281.
 bacteria in, A., 406.
 bactericidal action of ultra-violet light on, B., 528.
 decomposition of organic matter in, by bacteria, A., 1169.
 urea-splitting bacteria in, A., 664.
 Baltic, nitrogen compounds in, A., 1343.
 of the North Atlantic, phosphate in, A., 1219.
 of the ocean, helium-neon content of, A., 724.
 of the Pacific ocean, A., 724.
 plankton formation and nitrate and phosphate cycles in, A., 1219.
 of the Puget Sound region, A., 724.
 determination in, of organic carbon, A., 949.
 of dissolved organic carbon and nitrogen, A., 185.
 snow, isotopes in, A., 1219.
 underground, waterproofing against, with bituminous materials in Berlin subways, B., 1054.
 determination of p_H of, A., 52.
 detection and determination in, of fluorine, B., 832.
 determination in, of salts, turbidimetrically, B., 48.
Water analysis:—
 analysis of, A., 462; B., 256, 432, 880.
 expression of results in, B., 704.
 detection in, of active chlorine, B., 208.
 of free chlorine, by *o*-tolidine test, B., 128.
 determination of, A., 1336.
 by V. Meyer's method, A., 316.
 effect of humidity on, B., 209.
 in small samples, A., 1471.
 in foods, etc., with Bunzell-Becker apparatus, B., 428.
 in foods and pharmaceutical products, B., 45, 78.
 in grain, B., 121, 249, 697.
 in liquids and solids, volumetrically, B., 785.
 in organic compounds, A., 1140.
 in organic liquids, volumetrically, A., 835.

Water analysis:—
 determination of, in solvents, B., 395.
 vapour, determination of, in gases, B., 705.
 gravimetrically, in mixed gases, B., 628.
 determination in, of albuminoid nitrogen, B., 527.
 of ammonia, A., 184.
 of calcium and magnesium, volumetrically, B., 48.
 of chlorides, A., 316.
 of chlorine, B., 1024.
 by *o*-tolidine method, B., 480.
 of residual chlorine, B., 928.
 of chloroamine, B., 1071.
 of cyanides, B., 656.
 of fluorine, and toxic concentration, A., 316.
 of nitrates, colorimetrically, A., 1337.
 of odour, by air-dilution method, B., 127.
 of oxygen, A., 717.
 by Alsterberg and Winkler methods, B., 704.
 of oxygen, with syringe pipettes, B., 528.
 of dissolved oxygen, colorimetrically, B., 928, 1072.
 of phosphates, A., 836.
 of phosphoric acid, B., 176.
 of silicic acid, photometrically, A., 1472.
 of silver, A., 719.
 of sulphates, with potassium palmitate, B., 880.
 turbidimetrically, B., 880.
 of surface-active impurities, B., 288.
 of zinc, with sodium diethyldithiocarbamate, B., 752.
Water-baths, thyatron control for, A., 1217.
Water of crystallisation, characteristics of, A., 1300.
 deuterium in, A., 48.
 of minerals, deuterium oxide in, A., 1477.
 removal of, from crystals, etc., (P.), B., 258.
Water-gas. See Gas, water-.
Water-glass. See Sodium silicate.
Water pipes, aluminium-zinc alloys for, (P.), B., 236.
 use of lead alloys in, B., 1024.
 corrosion of, B., 784.
 and its prevention, B., 880.
 treatment of water to prevent, B., 480.
 underground corrosion of, in south-eastern United States, B., 410.
 iron, corrosion of, B., 1145.
 failures in, B., 103.
 iron and lead, corrosion of, B., 770.
 iron and steel, corrosion of, by Catskill supply, New York City, B., 27.
 cast-iron, use of chloroamines for maintaining carrying capacity of, B., 336.
 cast-iron and steel, failures in, B., 103.
 frozen, thawing of, B., 385.
 lead, B., 256.
Water supply, tastes and odours in, produced by electric currents, B., 383.
 effect of road oils and tars on, B., 480.
 chlorination of, B., 256.
 Cheltenham, chlorination of, B., 1168.
 of Colorado, fluorine in, in relation to mottled dental enamel, A., 399.
 of Lexington, Virginia, deposition of travertine from, A., 1477.
 of Lincoln, Nebraska, removal of iron and manganese from, B., 527.

Water supply, London, chemical and bacteriological examination of, B., 1168.
 of Los Angeles, chlorination of, B., 752.
 of Motticella Baths, Calabria, A., 468.
 Potsdam, removal of iron and manganese from, B., 1168.
 of United States, spectrographic analysis of, B., 608.
Watermelons, vitamin-C in, B., 171.
Waterproofing, (P.), B., 304.
 composition for, (P.), B., 308, 367, 684, 848.
 rubber composition for, (P.), B., 322.
 against underground water with bituminous materials, B., 1054.
 of cement, mortar, etc., (P.), B., 675.
 of electrical conductors, (P.), B., 910.
 of fabrics and paper, (P.), B., 354.
 of fibrous materials, (P.), B., 401, 450, 944.
 of leather, (P.), B., 470.
 of masonry, B., 592.
 of mortar, B., 547.
 of paper, etc., (P.), B., 185, 278, 799, 816.
 of wool fibres, B., 989.
 of wool and animal hair textiles, (P.), B., 848.
Waterworks, precautions in use of chlorine in, B., 1072.
 use of sodium aluminate in filter-plant in, B., 256.
Waves, electric. See Electric waves.
 supersonic, effect of, on chemical phenomena, A., 306.
 ultrasonic, apparatus for production of, A., 573.
 in gases, A., 1062.
 refraction of, A., 289.
 luminescence in water caused by, A., 429.
 absorption and reflexion of, in air and carbon dioxide, A., 20.
 dispersion of, in liquids, A., 20.
 velocities of, in liquids, A., 690.
 effect of, on physico-chemical properties, A., 690.
 on colloid solubility of metal hydroxides, A., 1320.
 formation of emulsions by, A., 296, 820.
 formation of metallic colloids by, A., 296.
 blackening of photographic plates by, A., 458.
 standing, in transparent solids, A., 1312.
 wireless, magneto-ionic theory of, in the ionosphere, A., 144.
Wax or Waxes, treatment of, (P.), B., 263.
 by-products from sulphuric acid refining of, (P.), B., 56.
 bleaching of, (P.), B., 912.
 hydro-cracking of, B., 158.
 oil-holding capacity of, B., 560.
 refraction and dispersion of, B., 1125.
 electrical conductivity of, B., 660.
 viscosity of, B., 289.
 crystallising point of solutions of, B., 597.
 coating of inside of metal containers with, (P.), B., 909.
 manufacture of emulsions of, (P.), B., 1150.
 with water, (P.), B., 860.
 for gramophone records, B., 1102.
 artificial, production and applications of, B., 560.

Wax or Waxes, bees-, decolorisation of, by adsorbent clays of Voronezh district, B., 958.
 effect of electric field on thermal conductivity of, A., 923.
 space charge in, during solidification, A., 282.
 so-called cerotic acid of, B., 560.
 substitutes for, (P.), B., 1127.
candelilla, hydrocarbons of, A., 551.
 Chinese, acids of, A., 551.
 chlorinated, stabilisation of, (P.), B., 13.
esparto grass. See under *Esparto* grass.
 insect and plant, alcohols, fatty acids, etc., in, A., 267.
 metabolism of, A., 264.
 Japan, bleaching of, B., 560, 733.
 fatty acids of, B., 859.
 montan, extraction of, from Ukrainian brown coals, B., 54.
 bleaching of. See under Bleaching.
 raising m.p. of, (P.), B., 538.
 influence of solvents on hydrogenation of, under pressure, B., 392.
 synthetic, production of, (P.), B., 959.
 microscopy of, B., 129.
 analysis of, B., 560.

Wax compositions, analysis of, B., 560.

Wax polishes. See under Polishes.

Wax powders, manufacture of, (P.), B., 238.

Weaving machines, pickling band leather for shuttles of, B., 817.

Weeds, control of, (P.), B., 517.
 in young cereals, B., 646.
 tolerance of, to toxic aluminium, B., 821.
 destruction of, by "Chitemene" system of wood burning, B., 116.
 seeds of, in stall manure, B., 741.
 viability of seeds of, in stall manure, B., 968.
 Oklahoma, calcium, nitrogen, and phosphorus in, A., 551.
 of Southern Rhodesia, A., 1436.

Weed-killers, B., 247; (P.), B., 518, 1062.
 manufacture of, (P.), B., 168.
 thiocyanates as, B., 567.
 spray, wetting agents for, B., 1111.

Weevils, control of, with calcium carbonate, B., 331.
 apple-blossom, control of, with derris dust, B., 1013.
 rice, control of flour beetles and, B., 250.

Wei-ling-sien, B., 1164.

Weighing by swings, A., 1342.

Weight, measurement of, with temperature variation, A., 599.

Weights, atomic. See Atomic weights.
 analytical, device for maintaining constancy of, A., 467.
 molecular. See Molecular weights.

Weinschenkite, A., 324.

Welds, electric-arc, properties of, B., 594.

Welding, methods of, B., 1050.
 electrodes for, (P.), B., 1053.
 copper alloy electrode for, (P.), B., 682.
 rods for, (P.), B., 29, 504.
 transition structures in fusion of austenitic rods for, B., 856.
 brass alloys for rods for, (P.), B., 461.
 coated rods for, (P.), B., 315.
 copper alloy rods for, (P.), B., 1051.
 steel rods for, (P.), B., 108.
 use of vapour-phase cracked gases for, B., 153.
 with ferrosilid, B., 1050.
 in the building industry, B., 1098.
 in chemical industry, B., 554.
 of containers containing combustibles, B., 1050.

Welding, acetylene, production of electrostatic charges by flowing gases in, B., 1146.
 aluminothermic, iron for, (P.), B., 313.
 arc-, (P.), B., 682.
 electrodes for, (P.), B., 958, 1001.
 rods for, (P.), B., 29.
 metallurgy of metals deposited in, B., 637.
 physical properties of deposited metals in, B., 857.
 direct-current arc, B., 1050.
 autogenous, chemistry of, B., 728.
 electric, fluxes for, (P.), B., 812, 958.
 rods for, (P.), B., 858.
 deposition of metals in, (P.), B., 1099.
 electric resistance, (P.), B., 108.
 spot-, B., 460; (P.), B., 681.
 apparatus for testing of joints in, B., 310.
 detection of faults in, with X-rays, B., 310.

Wells, setting inhibitors for cement for, B., 228.

Wetting, inter-phase energies in, A., 1458.
 heat of. See Heat of wetting.
 aqueous solutions for, B., 1129.

Wetting agents, (P.), B., 449.
 manufacture of, (P.), B., 14, 57, 59, 92, 93, 139, 237, 443, 487, 539, 585, 619, 847, 939, 940, 1131.
 effects of, on pigment dispersion, B., 32.
 for insecticides, B., 743.

Wetting-out agents, (P.), B., 847.
 production of, (P.), B., 267, 619.

Whales, physiology of, A., 889.
 pro-vitamin-A in food of, A., 1427.
 production of meat extract from, (P.), B., 523, 605.
 fin-back, organic base from muscle of, A., 646.

Whale-shark-liver oil, A., 1144.

Wheat (*wheat grain*), effect of seed dips on germination and growth of, B., 165.
 chemistry of ripening of, after harvesting, B., 1017.
 feeding value of maize, soya beans, and, B., 923.
 fibre content of British-milled feeding-stuffs of, B., 77.
 quality of, influence of manuring on, B., 325.
 effect of potassium fertilisers on, B., 73.
 and reducing power, B., 475.
 influence of time of harvesting on, B., 570.
 mechanical test for, B., 1160.
 micro-tests for, B., 872.
 Göttingen test for, B., 203, 1113.
 experimental milling for testing, B., 1017.
 effect of harvesting methods on moisture content and grade of, B., 697.
 aleurone layer of, B., 745.
 carbohydrate content of, during drought-hardening, A., 796.
 carbohydrate content of flour and, B., 121.
 particle size of gluten in, B., 921.
 influence of weather on nitrogen content of, B., 474, 1160.
 nitrogenous matter of flour and, B., 745.
 hydrolysis of phytin compounds from, A., 134.
 pigments in alcohol and acetone extracts of, B., 425.
 pigments in gasoline extract of, B., 425.
 correlation between protein content and other properties of, B., 1017.
 proteins in, and its bread-baking qualities, B., 475.

Wheat, fission of starch in heating of, B., 121.
 osmotic activity of sugars in, A., 904.
 granulation of wholemeal of, B., 650.
 whole meal fermentation time test on, B., 697.
 meal-gluten swelling test on, B., 697.
 diastatic activity in, B., 650, 651.
 vitality of, B., 170.
 baking value of, B., 250, 330.
 improvement of baking quality of, B., 377.
 preservation of, (P.), B., 747.
 damage of, by insects, B., 425.
 red mould in, B., 472.
 rust-resistance in, A., 269.
 action of arsenic compounds on spores of black rust in, A., 1281.
 carotenoid pigments of uredospores of rust of, A., 798.
 salt-resistance of, B., 697.
 control of smut in, by dipping, B., 246.
 removal of smut and odours from, (P.), B., 972.
 incidence of "take-all" on, on experimental plots at Woburn, B., 821.
 injury of, by wheat bug, B., 1013.
 from grey and black soils of Alberta, quality of flour from, B., 1160.
 Armenian, variations in composition of, B., 42.
 Australian, quality of, and its improvement, B., 1065.
 Eastern Australia, inorganic composition of, A., 796.
 Canadian, starch content of, B., 823.
 damp, respiration and heating of, B., 697.
 developing, changes in nitrogen compounds in, A., 1549.
 dormant and germinating, enzymes in, A., 1179.
 German, conditioning of, to improve baking quality, B., 746.
 pedigreed, differentiation between, A., 552.
 ripening, proteins of, A., 264.
 spring, effect of soil moisture on, B., 37.
 hard red spring, environment and carotenoid content of, B., 170.
 determination in, of moisture, B., 121.
 toxic, haemoglobin levels after feeding on, A., 396.
 winter, effect of smut treatments on yield of, B., 167.
 ice formation and hardness in, A., 268.
 yarovisation and frost-resistance of, B., 199.
 soft, viscosity and protein content of, B., 425.
 zelio, poisoning by. See under Poisoning.
 determination in, of carotenoid pigment, B., 425.
 of phosphorus, B., 1018.
 and its products, of moisture with air-ovens, B., 1114.

Wheat bran, betaine in, A., 1041.

Wheat extracts, preparation of, containing a growth-factor, A., 663.

Wheat germ, growth factor from, A., 534.
 phosphatides of, A., 421.
 phytosterol of, A., 1551.

Wheat-germ oil, constituents of, A., 1551.
 phytosterol of, A., 1551.
 vitamin-E from, A., 418.
 cure of growth-deficiency disease by, A., 418.

Wheat meal, action of potassium bromate, etc., on baking capacity of, B., 1115.

Wheat plants, effect of frost on, in various stages of maturity, A., 1288.

- Wheat plants**, effect of lucerne cropping on succeeding crops of, B., 1110.
 influence of method of distribution of fertilisers on, B., 689.
 winter manuring of, with nitrogen, B., 373.
 effect of nitrogen on growth and nitrogen content of, B., 325.
 effect of nitrogen fertilisers on composition, growth, and yield of, B., 116.
 nitrogen status of, in relation to mineral nutrition, B., 117.
 rôle of climate and soil in nitrogen, potassium, and phosphorus contents of, B., 471.
 potassium nutrition of, B., 73.
 effect of potassium supply on, B., 244.
 effect of sodium chlorate and ammonium thiocyanate applications on subsequent sowings of, B., 165.
 effect of *Rhizoctonia solani* on growth of, A., 898.
 fluorescence of ears of, B., 377.
 effect of soil moisture on chlorosis of, B., 244.
 seedling, effect of light on sensitivity of, to X-rays, A., 1022.
- Wheat products**, vitamin-B₁ and -B₂ content of, A., 1286.
 determination in, of starch, B., 250.
- Wheat straw**. See under Straw.
- Whey**, steam pressure in evaporation of, B., 873.
 production of concentrates of, (P.), B., 1067.
- Whisky**, ageing of, (P.), B., 696.
 ageing and colouring of, (P.), B., 970.
 determination of artificial colour in, B., 76.
- White lead**, B., 366.
 manufacture of, from lead chloride, (P.), B., 562.
- White metal**, spectral reflexion density of, B., 175.
 molten, penetration of, into stressed steel, B., 1047.
 scrap, refining of, (P.), B., 505, 680.
 determination in, of antimony, B., 64.
 of copper, A., 1216.
- Whiteware bodies**, swelling of, B., 22.
- Whooping-cough**, production of vaccines for, (P.), B., 975.
- Wien effect**, of aqueous solutions of long-chain salts, A., 37.
- Willows**, control of *Phyllodeca vitellinae* on, B., 822.
 basket, control of insect pests of, B., 822.
 weeping-, leaves of, as cattle feed, B., 428.
- Wilson chamber**, observations in, A., 1296.
 with increased time of sensitivity, A., 1341.
 improved, A., 275.
- Wines**, manufacture of, use of tannin in, B., 1016.
 clarification of, with potassium ferrocyanide, B., 41.
 toxicology of, B., 744.
 clarification and stabilisation of, by freezing, B., 76.
 measurement of colour of, B., 330.
 white casse in, B., 41.
 luminescence in, from partly-dried grapes, B., 376.
 oxidation-reduction potential of, B., 824.
 refrigeration of, B., 41.
 effect of cold and freezing on, B., 603.
 scoring system for, B., 695.
- Wines**, formol number of, B., 747.
 butyric acid in, B., 744.
 copper in, B., 920.
 reactions involving iron in, A., 51.
 iron complexes in, B., 1113.
 use of silicofluorides in, B., 330.
 residual sugar of, B., 425.
 calculation of sugar for improvement of, B., 779.
 "Tourné" disease of, B., 520.
 African native, B., 695.
 apple, B., 425, 520.
 bilberry, detection of dilution of, B., 824.
 "Brennwein," analysis of, B., 169.
 currant, B., 569.
 French, composition of, B., 121.
 fruit, B., 780.
 Polish, sorbitol in, B., 43.
 grape, removal of copper from, B., 41.
 nitrogen balance in, B., 376.
 sorbitol in, B., 871.
 detection in, of fruit wine, B., 169.
 determination in, of iron and copper, B., 744.
 honey, B., 76.
 high-alcohol, bacteria in, B., 780.
 Malaga, composition of, B., 695.
 of Palestine, B., 1016.
 Peruvian, composition of, B., 695.
 port, B., 425, 744.
 port and sweet, determination in, of hydroxymethylfurfuraldehyde and laevulosin, B., 871.
 white, colouring matters in, B., 169.
 flavin in, B., 203.
 treatment of iron turbidity in, B., 203.
 analysis of, B., 744.
 by methods of International Convention, B., 1016.
 micro-analysis of, B., 779.
 detection in, of benzoic acid, B., 1160.
 of bilberry juice, B., 744.
 of sorbitol, B., 203.
 determination in, of acetaldehyde, B., 920.
 of volatile acidity, B., 203, 330.
 of alcohol, extract, and total acid, B., 744.
 of aldehydes, B., 330.
 of arsenic, B., 1016.
 of citric acid, B., 1065.
 of extract, B., 779.
 of free sulphur dioxide, B., 569.
 of tannin, B., 695.
 "katadynised" determination in, of silver, B., 744.
- Wires**, production of, by cooling streams of liquid metal, B., 771.
 lubricants for drawing of, (P.), B., 909.
 metal coatings as, B., 550.
 corrosion of, in heating elements, B., 459.
 prevention of, (P.), B., 315.
 corrosion tests on, by decrease in breaking load method, B., 635.
 coating of, with varnishes, (P.), B., 684.
 for resistance furnaces, B., 158.
 aluminium-copper, B., 856.
 composite, (P.), B., 414.
 glowing, electron paths in electrical field of, A., 18.
 latex-insulated, properties of, B., 954.
 non-ferrous, effect of exposure on breaking load and electrical resistance of, B., 360.
 atmospheric corrosion of, B., 855.
- Wireless waves**. See under Waves.
- Wireworms**, control of, B., 248, 374.
- Witherite**, crystal structure of, A., 571.
- Wolfram's red salt**, A., 1487.
- Wolfram**. See Tungsten.
- "Wollstra," dyeing of**. See under Dyeing.
- Women**, castrate, attempted production of lactation in, A., 1426.
 college, in Florida, basal metabolism and diet of, A., 651.
 European, in South India, basal metabolism in, A., 387.
- Wood**, A., 478, 1179.
 fine structure of, A., 165, 1316.
 drying apparatus for, (P.), B., 929.
 kilns for drying of, (P.), B., 951, 1097.
 bending, etc., of, (P.), B., 1144.
 fibre saturation point of, B., 497.
 vapour-pressure lowering of liquids on adsorption by, A., 1316.
 adsorption compression of water on, B., 398.
 movement of liquids in, B., 408.
 molecular diffusion into, B., 408.
 thermodynamics of swelling of, B., 408.
 shrinking and swelling of, B., 632.
 shrinking of, (P.), B., 903.
 carbonisation of, B., 834.
 for production of charcoal, (P.), B., 1033.
 decomposition of, B., 229.
 thermal decomposition of, with superheated steam, B., 659.
 defibring of, (P.), B., 846.
 distillation of, apparatus for, (P.), B., 1073.
 retorts for, (P.), B., 890.
 effect of uncondensable gases and tar on destructive distillation of, B., 659.
 hydrolysis of, with formic acid, B., 1039.
 for furfuraldehyde production and subsequent saccharification of remaining cellulose, B., 795.
 and fermentable sugars, B., 119.
 pulping of, for production of viscose rayon, B., 490.
 metals for plant for, B., 153.
 saccharification of, B., 969; (P.), B., 119.
 seasoning of, B., 994, 1143.
 for pulp, B., 408.
 kilns for experiments on, B., 150.
 steaming of, B., 142.
 coating of, with metals, (P.), B., 994.
 fireproofing of, B., 308, 632; (P.), B., 309, 497.
 in ships, B., 102.
 fireproofing agents for, (P.), B., 951.
 testing of fireproofing compositions for, B., 727.
 impregnation of, (P.), B., 1076.
 impregnants for, for protection against fire, rot, and insects, B., 769.
 adhesives for, (P.), B., 1059, 1144.
 casein adhesives for, (P.), B., 470.
 glueing of, with bakelite, B., 852.
 priming paints for, B., 160, 464, 509.
 durability of white oil paints on, B., 1004.
 stain for, (P.), B., 904.
 acid-proof stain for, B., 684.
 aniline dyes for stains for, B., 1004.
 sap stains of, in Japan, B., 357.
 colouring of veneers, etc., of, (P.), B., 632.
 corrosion of metal fastenings in, treated with zinc chloride, B., 104.
 resistant steel for working with, B., 996.
 use of, for acetic acid plant, B., 806.
 chemical utilisation of, B., 798.
 feeding-stuffs from, B., 971.
 for paper-making, B., 308.
 sawdust from. See Sawdust.
 yield of sulphite- and sulphate-pulp from, B., 408.

- Wood**, relation of origin of, to quality of its sulphite- and sulphate-pulp, B., 446.
 manufacture of substitutes for, (P.), B., 309, 1103.
 effect of burning of, on soils by "Chitemeno" system, B., 116.
 action of calcium salts on, and "inorganic infiltration" theory of decay, B., 456.
 decay of, B., 1045.
 and formation of coal, B., 592.
 in relation to humification, B., 903.
 chemistry of, B., 308.
 discoloration of, in contact with coloured rubber goods, B., 512.
 hemicelluloses of, A., 1435.
 humification of, B., 456.
 damage of, by marine borers in Rangoon River, B., 102.
 chemistry of white rots of, A., 1042.
 preservation of, B., 357, 497, 548, 806, 1045; (P.), B., 229, 1045.
 chemistry of, B., 62.
 with coal-tar creosote oil, B., 852.
 finishes for, in the tropics, B., 109.
 finishing of, (P.), B., 593.
 preservatives for, (P.), B., 457, 632, 1159.
 laboratory test for, B., 994.
 determination of, B., 357.
 vermin-destroying composition and preservative for, (P.), B., 309.
 protection of, from bluing, (P.), B., 409.
 against attack by fungus, (P.), B., 806.
 against weather, and ply-wood, B., 456.
 protective paints for, and ply-wood, in damp atmospheres, B., 561.
 artificial, (P.), B., 633.
 manufacture of, (P.), B., 457.
 mouldable composition from, (P.), B., 1097.
 ash, microchemical tests for quality of, B., 675.
 aspen, volatile organic acids produced in saponification of, B., 587.
 Australian, chemistry of, B., 357.
 brittle heart in, B., 150.
 for poles, B., 950.
 beech. See Beech wood.
 coniferous, of Southern Rhodesia, manufacture of paper from, B., 57.
 of Fernando Po and the Iberian Peninsula, spectroscopy of, A., 1289.
 hard, paints for, B., 598.
 Australian, starch content and attack by powder post borer of, B., 726.
 of the Coastal Plain, pulping of, B., 667.
 impregnated, fire-resistance of, B., 548.
 Japanese, sap stains of, B., 852.
 low-grade and waste, carbonisation of, B., 580.
 Manchurian, B., 547.
 of Northern Rhodesia, preservatives for, B., 994.
 oak. See Oak wood.
 old, B., 806.
 paraffin-wax impregnated, resistance of, to water and sulphuric acid, B., 632.
 petrified, occurrence of gold in, B., 953.
 Philippine, composition of, B., 189.
 and their bark, tannin content of, B., 469.
 pine. See Pine wood.
 ply-, casein adhesive for, (P.), B., 371.
 phenolic resin adhesive for, B., 1103.
 testing strength of glued joints in, B., 548.
 determination of adhesive strength of, B., 271.
- Wood**, Romano-British, first century, B., 806.
 Tizera. See *Rhus pentaphylla*.
 treated, for railway stock, B., 852.
 waste, production of alcohols from, B., 249.
 production of ethyl alcohol from, B., 1045.
 identification of, chemically, B., 592.
 determination in, of lignin, B., 408, 845.
 of methoxyl groups, B., 844.
 Wood ash, magnetism of, B., 408.
 Wood fibres, colloidal properties of, A., 301.
 manufacture of sheets from, (P.), B., 491.
 hard, manufacture of, (P.), B., 97.
 Wood gum, determination of, in chemical pulp, B., 719.
 Wood oil, polymerised, hydrogenation of, B., 640.
 detection of, B., 159.
 Wood pulp, manufacture of, apparatus for, (P.), B., 721.
 influence of acid concentration and temperature in, B., 58.
 recovery of ammonia in, (P.), B., 144.
 mucilage as by-product from, B., 623.
 purification of, (P.), B., 1089.
 refining of screen tailings from, B., 490.
 bleaching of. See under Bleaching.
 laboratory beater for testing of, B., 16.
 relation of fibrillation to increase in strength on beating of, B., 399.
 small scale grinder for, B., 764.
 chlorination of, (P.), B., 448.
 heat of wetting of, B., 667.
 variability of, as an indication of pulp yield, B., 399.
 treatment of wood for, (P.), B., 799.
 improvement of wood for, by hybridisation of forest trees, B., 516.
 production of nitrocellulose from, B., 126.
 chemical, manufacture of, (P.), B., 987.
 effect of beating, loading materials, cooking, and calendering on, B., 184.
 chemical and mechanical, determination of, in paper and pulp, B., 986.
 ground, production of plastics from, B., 562.
 Western hemlock, colouring matter in, B., 942.
 mechanical, effect of temperature and consistency in production of, B., 1087.
 energy consumption in grinding of, B., 1088.
 pressed, thermal treatment in production of, B., 798.
 determination of, in paper, B., 400.
 Wood rosin. See Colophony, wood.
 Wood, X-ray structure of, A., 1195.
 manufacture of, lubricants for, B., 791.
 Eulan treatment of, B., 1090.
 carbonisation of, (P.), B., 1137.
 by aluminium chloride process, and its effect on dyeing properties, B., 625.
 removal of sulphuric acid in, B., 449.
 chlorination of, B., 986.
 halogenation of, B., 488.
 oiling of, B., 665, 843.
 constitution and levelling properties of acid dyes for, B., 352.
 printing of. See under Printing.
 waterproofing of, (P.), B., 848.
 effect of temperature on moisture regain of, B., 445.
 effect of heat on, B., 718.
 absorption of acid by, B., 95.
 acid-combining capacity of, B., 1087.
 effect of alkalis on, B., 896.
- Wool**, action of halogens on, B., 95.
 amino-nitrogen in collagen and, B., 764.
 calcium and sodium content and quality of, B., 843.
 origin of sulphur in, A., 376.
 iodine value of, B., 488.
 determination of damage of, by methylene-blue absorption, B., 986.
 damage of, in chlorination, B., 766.
 preservation of, against insects, B., 449.
 protection of, against damage by moths, (P.), B., 98.
 mildew of, B., 1135.
 yellowing of, by ultra-violet light, B., 540.
 photography in research on, B., 843.
 substitutes for, (P.), B., 1138.
 manufacture of, (P.), B., 18.
 growth of, on sheep in relation to carbohydrates in diet, B., 827.
 artificial, manufacture of, (P.), B., 351, 668.
 from seaweed, (P.), B., 143.
 chemically-treated, resistance to tearing and breaking of, B., 665.
 chlorinated, dyeing of. See under Dyeing.
 decaminated, affinity of, for acid dyes, B., 353.
 dyed, improvement of colour of, (P.), B., 542.
 iron stains on, B., 897.
 "frosted," B., 665.
 merino, sulphur in, B., 843.
 raw, carbonisation of, (P.), B., 846.
 sheep's, cystine content of, in relation to diet, A., 376.
 determination of, in textiles, B., 1038.
 determination in, of sulphur and sulphates, B., 220.
 Wool fat, purification of, B., 1002.
 spectroscopic analysis of vitamin-D in, A., 793.
 Wool fibres, treatment of, to render them unshrinkable, (P.), B., 19.
 chemical treatment of, B., 16.
 effect of heat on, B., 1087.
 waterproofing of, with aluminium salts, B., 989.
 determination of degree of carbonisation of, B., 986.
 resistance of, to bacterial disintegration, B., 350.
 Woollen fabrics, bleaching of. See under Bleaching.
 heat-proofing of, (P.), B., 19.
 production of shrinkage effects on, (P.), B., 766.
 Woollen goods, knitted, production of unshrinkable finish on, with aqueous solutions of bromine, B., 353.
 dermatitis caused by, B., 896.
 mordant-dyed, acid-milling of, B., 224.
 Workrooms, removal of toxic gases and dusts from atmospheres of, B., 430.
 Worms, cabbage-, non-arsenical insecticides for control of, B., 1012.
 earth, destruction of, B., 690.
 prune, control of, B., 248.
 Worts, production of, (P.), B., 1160.
 separation of hops and sediment from, B., 569.
 separation of sediments from, B., 202.
 separation of sediment from boiling and cooling of, B., 203.
 gauging volume of, by Erhard-Schau apparatus, B., 249.
 influence of biological acidification on composition of, B., 871.

(*o*-Xylene, *Me:Me*=1:2; *m*-xylene, *Me:Me*=1:3; *p*-xylene, *Me:Me*=1:4).

Worts, effect of fermentation on phosphates in, B., 474.
Munich beer, assimilable nitrogen in, B., 970.
determination in, of yeast, B., 519.
Wounds, treatment of, with cod-liver oil, A., 1150, 1271.
bullet, detection of mercury in, A., 247.
Wrapping materials, production of, from cellulose, (P.), B., 562.
moistureproofing of, (P.), B., 1139.
packing with, (P.), B., 669.
for foods, B., 16.
for storage of fruit, B., 204.
for photographic goods, (P.), B., 185.
cellulose, determination of water-vapour permeability of, B., 1088.
oil- and water-proof, (P.), B., 185.
transparent, manufacture of, (P.), B., 799.
waterproof, manufacture of, (P.), B., 721.
transparent, manufacture of, (P.), B., 624.
Wrass, blood of. See under Blood.
Wulfenite, occurrence of, in N. Arkansas, A., 469.
Wurtz synthesis, A., 728.
Wyomingite, product of alumina and potash from, B., 627.

X.

Xanthane group, A., 497.
Xanthic acid, salts, surface tension of, A., 819.
potassium salt, alcohol esters of, B., 486.
silver salt, determination of, A., 596.
salts and esters, dissolving of, (P.), B., 1077.
barium β -phenylglucosidyl ester, A., 1354.
furfuryl ester, manufacture of, (P.), B., 622.
methyl methylglucosidyl esters, and their derivatives, A., 1354.
potassium isobutenyl ester, manufacture of, (P.), B., 443.
unsaturated alkyl esters, manufacture of, (P.), B., 443.
Xanthine, oxidation-reduction potential of hypoxanthine and, A., 170.
thermal data for, A., 1324.
Xanthines, methylated, dissociation constants of, A., 1509.
Xanthine-oxidase, A., 248, 401.
spectroscopy of, A., 1535.
identity of, with Schardinger enzyme, A., 1162.
in muscle and tumour extracts, A., 782.
Xanthium strumarium, oil content of, B., 814.
neo- and *isoneo*-Xanthobilirubic acids, syntheses of, A., 631.
Xanthone, dipole moment of, A., 430.
Xanthone, 3-amino-, benzoyl derivative, 3-iodo-, 2-iodo-7-nitro-, and 2-nitro-7-amino-, benzoyl derivative, A., 497.
Xanthone dyes, manufacture of, (P.), B., 141.
Xanthone-3:1'-azo-4'-dimethylaniline, A., 497.
Xanthone-3:1'-azo-4'-hydroxy-3'-benzoic acid, A., 497.
Xanthone-3:1'-azo-2'-hydroxy-3'-naphthoic acid, A., 497.
Xanthone-3:1'-azo-2'-naphthol, A., 497.
Xanthone-3:1'-azo-2'-naphtholdisulphonic acids, A., 497.

Xanthone-3-azophenol, A., 497.
Xanthone-3:1'-azo-2:4'-resorcinol, A., 497.
Xanthophylls, change of, in the body, after intestinal absorption, A., 114.
leaf-, analysis of, mixed with β -carotene, A., 551.
Xanthurenic acid, A., 1007, 1268.
Xanthoxalaldehyde, A., 869.
Xenoliths, basic, origin of, in plutonic rocks, A., 954.
Xenon, manufacture of, from air, (P.), B., 900.
recovery of, from air, (P.), B., 227.
molecular refraction of, A., 13.
absorption spectrum of, A., 271.
Zeeman splitting in spectrum of, A., 423.
X-ray absorption coefficient of, A., 139.
ionisation potential and formation of multiply-charged ions in, A., 4.
solubility of, in liquid oxygen, A., 25.
determination of, in air, A., 463.
Xenopus laevis, mortality curve of, to strophanthin, A., 527.
poisons from, A., 1502.
Xenyl esters and ethers, A., 614.
o- and *p*-Xenyl ethyl and butyl ethers, A., 614.
p-Xenylcarbimide, preparation of, A., 206.
Xylan, constitution of, A., 201.
esters, A., 331.
Xylene, separation of, from benzene and toluene in Shukko crude oil, B., 581.
from Shukko crude gasoline, B., 179, 392, 535.
Xylenes, polarisation of Raman radiation of, A., 1301.
iodination of, and their diiodo-derivatives, A., 1229.
Xylenes, bromo- and chloro-iodo-, A., 1114.
halogeno-, nitration of, A., 1487.
o-Xylene, 3:6-diamino-, phenazine derivative, 3:6-dichloro-, and 4:5-dichloro-3:6-dibromo-, and *mono*- and *di*-nitro-, A., 204.
4-nitro-5-*p*-amino-, toluenesulphonyl derivative, A., 94.
o-Xylenes, dichloro-, A., 204.
m-Xylene, vapour pressure of, A., 22.
determination of, B., 938.
m-Xylene, 4:6-dinitro-, condensation of, with aldehydes, A., 619.
4-nitro-6-hydroxylamino- and -6-nitroso-, A., 482.
o- and *m*-Xylenes, 4-bromo-2- and -3-chloro-, A., 853.
p-Xylene, 2:5-dichloro-, sulphonyl derivatives, A., 739.
2:3- and 2:6-dichloro-, and their sulphonyl derivatives, A., 739.
2:3:5-trihydroxy-, A., 982.
2-nitro-6-hydroxylamino- and -6-nitroso-, A., 482.
Xylenesulphonic acid, *p*-aminophenyl and 2:4-diaminophenol derivatives, production of, B., 984.
m-Xylenesulphonic acid, glycine salt, A., 1486.
Xylenols, compounds of, with cineole and *m*-5-xylidine, A., 744.
o-4-Xylenol, reduction of, A., 338.
Xylenyl β -methylallyl ethers, A., 483.
2:5-Xylic acid, 4-bromo-, and 4-nitro-, A., 1363.
Xylidine, constituents of, B., 539.
mercurichlorides, A., 1139.
o-3-Xylidine, occurrence of, in commercial xylidine, B., 539.

m-5-Xylidine, compounds of, with cresols, ethylphenols, methyl ethylphenols, and phenol, A., 744.
 β -Xylidinocrotonoxylidides, A., 336.
d-Xylitol pentaacetate, A., 1354.
Xyloglucuronic acid, barium salt, A., 964.
Xyloglucuronide, hydrolysis of, A., 964.
l-Xyloketose, origin of, in urine, A., 1147.
d-Xylomethyllose. See 5-Deoxyxylose.
Xylonic acid, calcium salt, A., 732.
magnesium salt, production of, (P.), B., 403.
Xylonitriles, absorption spectra of, A., 913.
2:5-Xylonitrile, 4-bromo-, and 4-nitro-, A., 1363.
p-Xyloquinone, hydroxy-, A., 982.
Xylose, production of, from sunflower-seed husks, B., 329.
electrolytic oxidation of, in presence of alkaline-earth salts, A., 732.
effect of p_H on absorption of, A., 522.
effect of hydrogen sulphite solutions on, A., 847.
tetrabenzoyl derivative, A., 1354.
preparation of trihydroxyglutaric acid from, A., 327.
d-Xylose ethyl mercaptal 2:3:4:5-tetraacetate 6-triphenylmethyl ether, A., 735.
3:5-dinitrobenzoylhydrazone, A., 197.
o-*d*-Xylose, purification of, and its mutarotation, A., 199.
l-Xylose, preparation of, A., 734.
 β -*l*-Xylose, synthesis of, and its tetraacetate, A., 325.
Xylose syrup, production of, from aspen wood, B., 1064.
Xylosebenzylmercaptal, dibenzoyl derivative, A., 1354.
1-*m*-Xyloylallochrysoketone 9-oximo-, and its sodium salt, A., 992.
6-*m*-Xyloyl-5:10-benzoylene-1:3-dimethylmorphanthrid-9-one, A., 992.
m-Xyl chloride, preparation of, A., 1114.
m-Xylenedichloromalonic acid, and its diethyl ester, A., 83.
m-Xylenedi-*a*-chloropropionic acid, A., 83.
S-*s*-Xyloxytrichloromethylthiol, A., 854.

Y.

Yakriton, A., 538.
Yarns, manufacture of, apparatus for, (P.), B., 300.
liquid treatment of, (P.), B., 946.
antistatic dressing for, (P.), B., 943.
dyeing of. See under Dyeing.
reduction of static electrical effects with, (P.), B., 765.
measurement of electrical resistance of, B., 363.
numerical representation of crêped state of, B., 488.
determination of crêpage in, B., 1038.
acetate and viscose, sizing of, B., 588.
artificial, manufacture of, (P.), B., 17, 300, 588, 720, 944, 1040.
apparatus for, (P.), B., 669.
treatment of, (P.), B., 1040.
spun, manufacture and stretching of, (P.), B., 946.
"cable twist," irregular colouring in fabrics of, B., 19.
cotton. See Cotton yarns.
crêpe, manufacture of, (P.), B., 1137.
form of, B., 16.
See also Crêpes.
crimped, production of, (P.), B., 447.

Yarns, elastic, production of, from rubber latex, (P.), B., 279.
 film, production of, B., 986.
 flax. See Flax yarns.
 spun, manufacture of, (P.), B., 18.
 textile, treatment of, with rubber latex, (P.), B., 1140.

Yeast, growth and yields of, from sugar solutions, B., 40.
 influence of p_H on growth of, in medium containing asparagine, A., 253.
 effects of inositol, pantothenic acid, and vitamin- B_1 on growth of, A., 124.
 reproduction of, A., 1027.
 spore formation by, B., 694.
 life of, over long periods, A., 785.
 separation of Greek strains of, in over-acid media of tartaric acid, A., 661.
 registration of death of cultures of, A., 124.
 manufacture of, (P.), B., 824.
 reactions in, by aëration method, B., 120.
 from waste molasses, B., 1015.
 with waste sulphite liquor, B., 1112.
 treatment of, (P.), B., 970.
 action of ultra-violet light on, A., 898.
 irradiation of, with ultra-violet light, A., 253, 534.
 action of ultra-violet light on invertase of, A., 1538.
 acclimatisation of, to "high-temperature-high alcohol complex," B., 744.
 suspensions, oxidation-reduction potential of, A., 1165.
 variability of, as measured by Brabender fermentograph, B., 1112.
 influence of copper on, B., 202.
 effect of glycine-alcohol mixtures on, shaken with oxygen, A., 897.
 influence of saponin on, A., 1418.
 dehydrase activity of, A., 253.
 lactic acid dehydrogenase of, A., 1276.
 diplophase and haplophase in, A., 1418.
 flavin content of, A., 1165.
 α -glucosidase of, A., 69.
 gum content of, A., 1281.
 bone glue as source of nitrogen for, B., 76.
 assimilation of nitrogen compounds by, A., 1538.
 phosphatases of, A., 661, 784, 1280.
 yellow pigment from, A., 1026.
 polysaccharides of, A., 1280.
 proteins of, A., 898.
 influence of temperature on activation of proteinase of, A., 660.
 factors influencing autolysis of, A., 405.
 acid production in autolysis of, A., 1280.
 influence of antiseptics on autolysis of, A., 124.
 action of fluoride on glycolysis in, A., 251.
 synthesis of reserve carbohydrates by, A., 1164, 1281.
 decomposition of citric acid by, A., 1538.
 dehydrogenation of ethyl alcohol by, A., 532.
 degradation of lactic acid by enzymes of, A., 661.
 effect of, and amino-acids on sugar, A., 1280.
 conditions of fermentation in factories for, B., 40.
 fermentation, action of X-rays on, A., 785.
 action of dinitroresol on, A., 1027.
 effect of dyes and of p_H on, A., 785.
 effect of grain proteins on, A., 396.
 effect of liver extract on, A., 253.

Yeast fermentation, effect of various sodium salts on, A., 405.
 of sugars, A., 1538.
 effect of acetic acid on, A., 661.
 of trioses, A., 1164, 1418.
 influence of alkali cations on fermentation capacity of, A., 534.
 action of light and photosensitive dyes on fermentation capacity of, A., 534.
 rôle of ferrous and ferric ions in fermentation and oxidation of, A., 253.
 fermentation inhibitor in, A., 1418.
 metabolism of, on repeated propagation, A., 897.
 metabolism, respiration, and gaseous exchange during growth of, A., 405.
 fat and lipin metabolism of, A., 1165.
 effect of aliphatic acids and aldehydes on cytochrome reduction by, A., 1539.
 reduction of hyposulphites by, A., 124.
 respiration of, A., 1027.
 in water containing heavy water, A., 405.
 effect of nitrophenols on, A., 661.
 action of dinitrophenols on, A., 253.
 effect of prolan on respiration and fermentation of, A., 542.
 ageing and respiration of, A., 1538.
 compressed product of, (P.), B., 696, 745.
 as indicator for growth-promoters, A., 124.
 poisoning of, by copper during brewing, B., 569.
 production of vitamin- C by acetic bacteria and, A., 670.
 effect of, on growth and reproduction of guinea-pigs, A., 792.
 on hypervitaminosis- A , A., 543.
 baker's, production of, (P.), B., 330.
 from brewer's yeast, (P.), B., 1017.
 from molasses and wood sugar, B., 518.
 brewer's, assimilation of nitrogen by, A., 253.
 ergosterol and fat increase in, A., 661.
 kinetics of fermentation of sugars by, A., 661, 1538.
 cake, effect of 2:4-dinitrophenol on respiration of, A., 1539.
 diastatically-active, B., 284.
 dried irradiated, effect of feeding on, on yield and composition of milk, A., 106.
 fermenting, hydrogenation by, A., 123.
 hydrogenation of unsaturated ketones by, A., 1367.
 bottom- and top-fermentation, differentiation of, B., 1016.
 fodder, production of, from wood-sugar solutions, B., 747.
 fresh, and its enzymes, degradation of α - and β -glycerophosphates by, A., 1026.
 living, adenosinetriphosphoric acid in, A., 1418.
 phosphorylation with, A., 1418.
 pressed, preparation of amylase solutions from, A., 1415.
 Springer's, action of 2:4-dinitrophenol on, A., 785.
 washed, action of 2:4-dinitrophenol on, A., 1027.
 wood-sugar, feeding of milch cows with, B., 122.
 determination of, in worts, B., 519.

Yeast-cells, action of oxygen on growth of, A., 1165.
 resistance of glycogen layer in, to ultra-violet light, A., 124.
 aerobic reducing intensity of, A., 897.
 detection in, of volutin, A., 534.

Yeast extracts, effect of, in anæmia, A., 649.
 hypoglycæmic action of, A., 243.
 effect of, on growth of rats on high fat diet, A., 1286.
 differentiation of meat extract and, B., 427.
 fermenting, determination of oxidation-reduction processes in, A., 253.

Yeast gum, determination of, in yeast, B., 649.

Yeast-nucleic acid, enzymic fission of, A., 1164.

Yellow fever, in monkeys, cerebrospinal fluid in, A., 237.

Ylang oils, classification of, B., 829.

Yoghurt. See under Milk.

Yohimbine, A., 367.
 constitution of, A., 1138.
 synthesis of skeleton of, A., 1388.
 dehydrogenation of, A., 367.
 effect of, on action of chloral hydrate and morphine, A., 893.
 influence of viscosity of blood on depressor action of, A., 1274.
 sympathicolytic activity of, A., 1410.
 utero-adrenalinolytic activity of, A., 397.
 detection of, colorimetrically, A., 1260.

Yohimboic acid, benzyl and α -chloro-, α -diethylamino-, and α -piperidino-propyl esters, and their salts, A., 875.

Young's modulus, determination of, by dynamic methods, A., 1476.

Ytterbium sulphate, acicular crystals of, A., 1086.

Yttrium, nuclear moment of, A., 137.
 $K\alpha$ -emission spectrum of, A., 1439.

Yttrium salts, complex, A., 714.

Z.

"Zamene" in basking sharks, A., 233.

Zaralite, artificial, A., 1479.

Zea mais, substance inhibiting root-growth of, A., 548.
 gold in, A., 1179.

Zeaxanthin, formation of, from rhodoxanthin, and its acetate, A., 754.

Zeeman effect, demonstration of, A., 1098.

Zein, hydrolysis products of, A., 369.
 and its iodo-derivative, electrometric titration of, A., 170.
 utilisation of, by rats, A., 1272.
 white, preparation of, from yellow corn, A., 268.

Zeolites, A., 1345.
 constitution of, A., 1345.
 manufacture of, (P.), B., 226.
 vapour pressure of, A., 1345.
 solid solutions of, A., 1075.
 surface action of, A., 929.
 diffusion of water or gases in crystals of, A., 1345.
 testing of, B., 1072.
 artificial, manufacture of, (P.), B., 306.
 from Csódi Mt., Hungary, A., 726.

Zephyllite, A., 842.

Zinc, isotopes of, A., 802.
 production of, recovery of cadmium from residues from, B., 502.
 from Trail lead blast-furnace fumes, B., 771.
 electrolytic treatment of, B., 233.
 pyro-electric furnace for recovery of, from ores, (P.), B., 1051.
 electrolytic recovery of, from ferrite compounds, B., 411.

Zinc, electrolytic recovery of, purification of zinc sulphate solutions for, B., 460.
 refining of, (P.), B., 235, 908.
 pure, properties of, B., 678.
 elastic constants of, A., 572.
 metallurgy of, B., 411.
 casting of, B., 678.
 cementation of, into metals by means of zinc dust, B., 191.
 vacuum arc spectrum of, A., 1437.
 band spectrum of, A., 799.
 K α -emission spectrum of, A., 1439.
 resonance spectrum of, A., 271, 423.
 ultra-violet spectrum of, A., 1045.
 rate of solution of electrodes of, in acids, A., 171.
 electrodeposition of, from acid solutions, B., 1050.
 from ammonium sulphate baths, B., 154.
 from its sulphate solutions, effect of colloids on, A., 305.
 electroplating with, control in, B., 65.
 cyanide baths and aluminium-mercury-zinc anodes for, B., 460.
 solutions for electrolytic coating with, B., 1050.
 specification of electrodeposited coatings of, B., 730.
 effect of aluminium in baths for galvanising with, B., 551.
 flux for galvanising with, (P.), B., 999.
 and its alloy with magnesium, specific heats of, A., 924.
 vapour pressure and chemical constant of, A., 815.
 vaporisation of, A., 465.
 vapour, condensation of, (P.), B., 315.
 band spectrum of, A., 2.
 fluorescence of mixtures of cadmium vapour and, A., 2.
 high-frequency discharge in, A., 272.
 thermal diffusivity of, A., 22.
 solubility of chromium, nickel, and manganese steels in, B., 191.
 crystal structure of, A., 1450.
 crystals, electrical resistivities of, A., 20.
 distortion axis of, from Laue diagrams, A., 1194.
 deformation of, A., 433.
 mosaic, A., 1306.
 twin, A., 572.
 velocity of solution of, in acids, A., 1083.
 corrosion of, in water, in presence of oxidising agents, A., 939.
 and its alloys, coating of, by dipping, (P.), B., 157.
 coating and cleaning of, (P.), B., 315.
 anodic coating of, (P.), B., 236, 506.
 and its alloys, (P.), B., 157.
 liquid coatings for, (P.), B., 735.
 and its alloys, painting of, B., 1151.
 precipitation of gold and silver on shavings of, B., 500.
 replaceability of, by magnesium, A., 292.
 action of acids on, A., 308.
 finishes for die-cast articles of, B., 32.
 coating with, of iron and steel articles, (P.), B., 504.
 rustproofing of steel work by coatings of, B., 457.
 detection of unsound spots in coatings of, on steel, B., 1050.
 boiler plates of, in German ships, B., 289.
 production of lithographic plates of, (P.), B., 236.
 production of plastic compositions from, (P.), B., 467.

Zinc, therapeutic application of, (P.), B., 174.
 rôle of, in reproduction, A., 1005.
 electrolytic, containing copper, density of, B., 362.
 testing of, B., 28.
 determination in, of cobalt and nickel, B., 1146.
 doubly-ionised, spectrum of, A., 1437.
 trebly-ionised, spectrum of, A., 1291.
Zinc alloys, A., 291; (P.), B., 956.
 surface treatment of, (P.), B., 1051.
 electrolytic and fire-refining of, B., 362.
 uses of, B., 678.
 phase changes during ageing of die castings of, B., 191.
 die-casting, B., 361; (P.), B., 556, 1099.
 with aluminium, A., 693; (P.), B., 235, 236.
 X-ray study of, A., 1455.
 aluminium-plated, uses of, B., 678.
 with aluminium and magnesium, age-hardening of, B., 771.
 with antimony, miscibility of, with magnesium-antimony alloys, A., 292.
 with antimony and tin, A., 816.
 with cadmium, electrodeposition of, from alkaline cyanide solutions, B., 857.
 electroplating with, from acid sulphate solutions, B., 555.
 with cadmium and tin, electrodeposition of, B., 233.
 with copper, A., 158.
 formation of, by inter-diffusion, A., 1066.
 mechanical properties of, B., 232.
 X-ray absorption of, A., 291.
 anodic dissolving of, A., 1467.
 corrosion of, B., 458.
 for condenser tubes, (P.), B., 638.
 corrosion-resistant, (P.), B., 155.
 determination in, of aluminium, B., 64.
 with copper and nickel, electrodeposition of, B., 554.
 with copper, nickel, silver, and tin, conductivity of, A., 576.
 with copper and with silver, structure of, A., 812.
 with iron, high crystallising force in formation of, B., 677.
 with lead, A., 158.
 with lithium, X-ray analysis of, A., 1455.
 with magnesium, effect of heat treatment on corrosion of, B., 65.
 with mercury, B., 500.
 electrosynthesis and structure of, A., 1330.
 with mercury and cobalt, manganese, or nickel, A., 23.
 with silver, A., 1198.
Zinc bases :—
 Zinc borofluoride hexamine, preparation of, A., 313.
Zinc salts, compounds of, with disodium paraperiodate, A., 51.
 biological chemistry of, A., 404.
 action of, with vitamins in animal nutrition, A., 1276.
Zinc arsenate, manufacture of, (P.), B., 900.
 arsenide and phosphide, crystal structure of, A., 812.
 carbonate, basic, manufacture of, (P.), B., 187.
 chloride, manufacture of, (P.), B., 226.
 treatment of solutions of, from petroleum refining, (P.), B., 1092.
 removal of iron from solutions of, B., 947.
 emission band spectrum of, A., 1051.

Zinc chloride, activity of, in presence of alkaline-earth chlorides, A., 582.
 solutions, preparation of, A., 1089.
 electrolysis of, in mixtures of water and ethyl alcohol, A., 456.
 preparation of pharmaceutical solutions of, B., 802.
 corrosion of metal fastenings in wood treated with, B., 104.
 reaction of, with amino-acids, A., 1460.
 chromate, B., 860, 913.
 basic, thermal decomposition of, A., 714.
 chromite, nascent, adsorption by, A., 930.
 cobaltinitrite, detection of potassium with, A., 1337.
 ferrite, formation of, from iron and zinc oxides, A., 1085.
 halides, absorption spectra of, A., 1299.
 absorption and fluorescence of, A., 1187.
 optical absorption and association of, in aqueous solution, A., 444.
 additive compounds of, with organic bases, A., 49.
 nitrate, fused, magnetic double refraction and light scattering of, A., 1448.
 oxide, lattice dimensions of, A., 1307.
 manufacture of, (P.), B., 100, 187.
 from roasted blende, etc., (P.), B., 495.
 size classification of, (P.), B., 629.
 electron diffraction of, A., 18, 1452.
 fluorescence of mixtures of, with iron oxide, A., 1055.
 conductivity of, A., 566.
 and its mixtures with chromic oxide, heat of adsorption of gases on, A., 1457.
 heat of solution of, in hydrofluoric acid, A., 935.
 adsorption by, of carbon monoxide and hydrogen, A., 27.
 catalytic action of, A., 830.
 reduction of, with natural gas, A., 592.
 reducibility of, and its volatility, B., 953.
 action of, with chromic oxide, A., 944.
 use of, in enamels, B., 674.
 brick-red, A., 180.
 pharmaceutical, luminescence of, B., 123.
 determination in, of cadmium and lead, by emission spectra, B., 1043.
 sulphate, manufacture of, (P.), B., 306.
 simultaneous discharge of ions at cathode in electrolysis of, A., 310.
 effect of germanium in electrolysis of solutions of, B., 154.
 throwing power of solutions of, B., 502.
 amines, as vulcanisation accelerators, B., 112.
 hydrates, dissociation pressures of, A., 302.
 sulphide, manufacture of, (P.), B., 948.
 and barium hydroxide, (P.), B., 187.
 effect of electric current on phosphorescence of, A., 1055.
 heat of formation of, A., 1324.
 phosphorescent, preparation of, A., 944.
 cadmium sulphide and sulphide lumino-phores, A., 565.
 orthotitanate, production of, (P.), B., 562.
Zinc organic compounds, complex, with 2:2'-dipyridyl, A., 312, 714.
Zinc alkyls, Raman spectra of, A., 681.
 dimethyl, photo-dissociation of vapour of, A., 1052.
 ethyl, preparation of, A., 333.
 sulphate, compound of, with benzidine, A., 613.

Zinc detection, determination, and separation :—
 detection of, A., 1473.
 in presence of cadmium by precipitation in gelatin, A., 186.
 determination of, A., 463, 719.
 with anthranilic acid, A., 1094, 1473.
 with benzidine, A., 597.
 colorimetrically, with dithizone, A., 719.
 iodometrically, by Lang's method, A., 1473.
 microchemically, A., 54.
 as pyrophosphate, A., 1093.
 with quinaldinic acid, and its separation from manganese, A., 318.
 volumetrically, A., 1473.
 in galvanised iron, B., 26.
 in presence of iron, electrochemically, A., 596.
 in magnesium and its alloys, volumetrically, B., 272.
 in presence of other metals, A., 1094.
 by quinaldinic acid, A., 597.
 in nickel, B., 771.
 in water, with sodium diethyldithiocarbamate, B., 752.
 in zinc ash, zinc oxide, and zinc residues, B., 551.
 separation of, from aluminium, A., 1338.
 from chromium, A., 719.
Zinc articles, coating of, (P.), B., 157.
Zinc blende. See Blende.
Zinc foil, manufacture of, (P.), B., 730.
Zinc ores, igneous concentration of, (P.), B., 314.
 removal of cadmium and lead from, (P.), B., 1089.

Zinc ores, dilution of flotation pulp of, B., 953.
 roasting of, in Balz furnace, B., 28.
 by salt-cake process, B., 551.
 reduction of, (P.), B., 908.
 by neutral gas, B., 411.
 of southern Appalachia, A., 954.
 containing copper and iron, flotation of, B., 191.
 of Friedensville, Pennsylvania, A., 1101.
 containing lead, flotation of, (P.), B., 908.
 of Rosebery, Tasmania, A., 190.
 sulphido, treatment of, (P.), B., 156.
 roasting of, (P.), B., 66.
 chloridising of, (P.), B., 1148.
 containing copper, flotation of, (P.), B., 314.
 containing copper and iron, flotation of, at Britannia, B., 770.
 containing lead, flotation of, B., 104.
 treatment of, (P.), B., 156.
 determination in, of cobalt and nickel, B., 1146.
Zinc sheets, production of, for use in galvanic cells, etc., (P.), B., 414.
Zinc white, production and use of, B., 1151.
 thickening of mixtures of linseed oil and, B., 640.
Zirconium, at. wt. and isotopes of, A., 802.
 production of alumina and, B., 305.
 thermal expansion of, A., 918.
Zirconium alloys, with silicon, (P.), B., 557.
Zirconium tetrabromide, action of, with potassium and with potassium amide in liquid ammonia, A., 1089.
 chloride, basic, effect of potassium salts on η_{H} of hydrosols of, A., 1459.

Zirconium tetrafluoride, A., 180.
 crystal structure of, A., 285.
 oxide, band spectrum of, A., 1051.
 dioxide, crystal modifications of, B., 1044.
 pyrophosphate, A., 833.
 silicate, equilibrium of formation of, A., 703.
Zirconium organic compounds, with 8-hydroxyquinoline, A., 939.
Zirconium detection, determination, and separation :—
 detection of, by induced precipitation, A., 1474.
 determination of, volumetrically, A., 316.
 with 8-hydroxyquinoline, A., 721.
 with *n*-propylarsinic acid, A., 319.
 in ores, by selenite-phosphate method, B., 272.
 in rocks, by phosphate method, A., 1339.
 in chromium steel and alloys, electrolytically, B., 807.
 separation of, from tin, A., 598.
Ziziphus sativa, vitamin-C in fruits of, A., 1176.
Zoisite, crystal structure of, A., 686.
Zwitterions, existence of, A., 166.
 organic, anomalous dispersion of electric waves in solutions of, A., 1303.
Zygosaccharomyces mandshuricus, precipitogenic properties of "radium" strains of, A., 1027.
Zymase, inactivation of, by diazomethane, A., 897.
 fermentation of sugar by, A., 1164.
Zymoflavin, extraction of, by methylal, A., 253.